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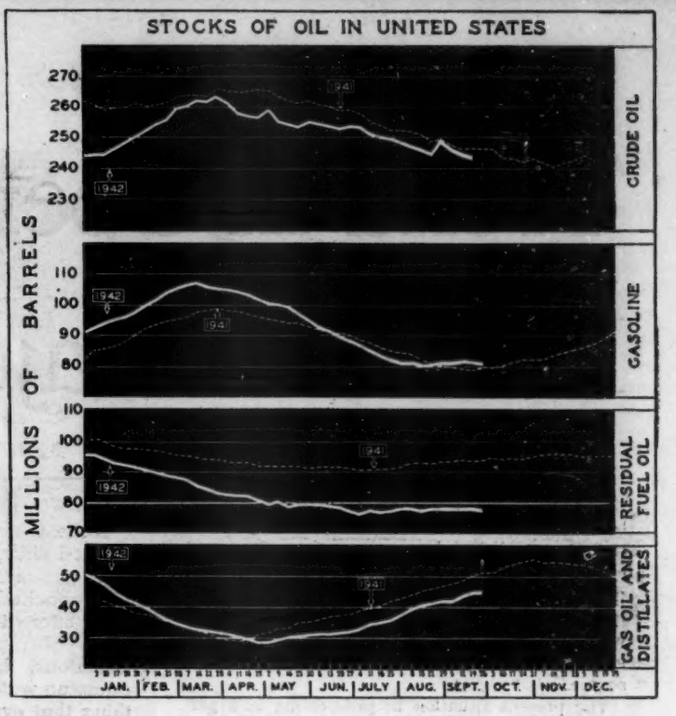
Trends

Flexibility Is Needed In Enforcing Latest Rationing Programs



THERE will have to be considerable flexibility in the enforcement of national gasoline rationing which is now scheduled to start about November 22, and in fuel-oil rationing to be applied to 30 eastern and midwestern states, October 15. This viewpoint comes from veteran gasoline and fuel-oil marketers and is supported by the industry's economists who are making studies as to what can be done and what can't be done in restricting the two most important outlets for petroleum.

It is pointed out that conditions vary widely in consumer areas and there is often no uniformity in motor-fuel and fuel-oil requirements among consumers living in the same city or on the same street. This situation has been revealed in the 19 states and the District of Columbia where gasoline rationing has been effective for several months but its importance will be magnified when rationing becomes nation wide. Investigators are in agreement that trouble will develop if the gasoline-rationing program of the eastern states is applied without amendments to the rest of the country. In most cities of the Middle West, Southwest, and the Rocky Mountain states, other transportation facilities are not as extensive and complete as they are in the East. Distances between cities and towns and from the farms to the urban centers are greater. There are towns and agricultural areas in which there are practically no transportation facilities for people except the family cars. Farmers must travel long distances by car or truck in marketing their products. Reports also show that in many of the new war production centers of the Middle West and Southwest, workers will have to rely entirely on cars for travel to and from work and for all transportation to schools and other points. With these conditions in mind, investigators do not believe that over a large part of the new areas to be rationed it will be possible to restrict gasoline use as now suggested by representatives of the Government.

The situation in the case of fuel-oil rationing is even more complicated. Many in close touch with conditions are certain that the 33 1/3 per cent reduction announced last week to take the place of the previous plan of 25 per cent, cannot be made fully effective. It would mean, it is contended, that temperatures in homes and other buildings will be lowered below the minimum requirements for health. The industry's investigations have also shown that conversion to other fuels will not be a big factor in reducing the fuel-oil needs over the next few months. These observers are confident that a reduction of 15 to 20 per cent in the fuel-oil consumption by civilians in the 30 eastern and midwestern states, is maximum.

CRUDE PRODUCTION *3,916,925 bbl. daily average — down 7,025 bbl. One year ago 4,062,000 bbl.*

CRUDE STOCKS *244,294,000 bbl. as of Sept. 19—down 377,000 bbl. One year ago 246,649,000 bbl.*

GASOLINE STOCKS *80,550,000 bbl. as of Sept. 26—down 243,000 bbl. One year ago 80,005,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *78,943,000 bbl. as of Sept. 26—down 392,000 bbl. One year ago 94,197,000 bbl.*

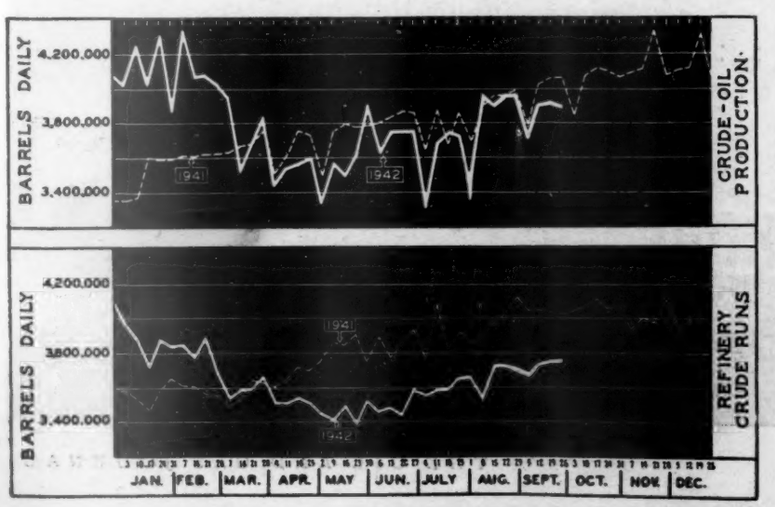
GAS OIL AND DISTILLATES *45,259,000 bbl. as of Sept. 26—up 817,000 bbl. One year ago 51,629,000 bbl.*

REFINERY RUNS *3,802,000 bbl. daily week ended Sept. 26 — up 89,000 bbl. One year ago 4,031,000 bbl.*

DAILY AVERAGE PRODUCTION FOR WEEK

	Sept. 26 crude oil	Sept. OPC quota all oils	Sept. 19 crude oil
Arkansas	73,000	81,900	73,350
California	728,750	791,500	739,750
Colorado	6,775	7,000	7,250
Eastern fields	97,500	109,300	95,200
Illinois	260,920	289,200	252,200
Indiana	16,850	19,300	17,450
Kansas	296,900	291,900	301,000
Louisiana	330,050	334,800	340,300
North Louisiana	*98,500*	.....	*99,900*
Louisiana Gulf Coast	*231,550*	.....	*240,400*
Michigan	63,000	66,700	62,900
Mississippi	73,400	50,200	73,500
Montana	21,700	22,800	21,710
Nebraska	3,400	3,900	3,450
New Mexico	98,580	98,100	98,350
Oklahoma	368,550	415,300	370,100
Texas	1,380,350	1,397,800	1,378,250
East Texas	*362,400*	.....	*362,400*
West Texas	*217,100*	.....	*212,800*
North Central Texas	*137,950*	.....	*136,900*
East Central Texas	*86,450*	.....	*85,700*
Texas Panhandle	*84,950*	.....	*90,600*
Texas Gulf Coast	*425,400*	.....	*423,800*
Southwest Texas	*66,100*	.....	*66,050*
Wyoming	97,200	93,400	89,190
Total United States	3,916,925	4,073,100	3,923,950

Total production, January 1-September 26, 1942 ..... 1,020,488,905 bbl.
Same period last year ..... 1,002,287,155 bbl.
Texas shutdown days, Sept. 20 and 26; preceding week, 13, 19.



Trend in Operating Technique Points to Major Advances

By HARRY F. SIMONS

THE trend in the operating end of the petroleum industry is toward the reduction of the burdensome operating charges. This will be partially accomplished by a revamping of present equipment and methods. The development of new machinery not yet conceived will play an important part. All of these changes in technique will be adopted to save money and increase as much as possible the recovery of a valuable resource.

The present situation in prospecting is a particularly glaring example. Everyone familiar with this problem knows that the discovery cost of each new barrel of oil is mounting alarmingly. Efforts are being made to refine the present equipment used, to adapt equipment and methods tried several years ago and discarded at that time, and to develop entirely new methods.

One trend that appears at this time is the increase in the use of geology and particularly the subsurface type. Much of the information needed is already in the files of many companies. All it needs is the proper organization and interpretation to pay dividends.

A recent example shows how a little expenditure for geological information at the proper time pays dividends. In this case a well in an old pool was about to be abandoned; the field was so old that it was drilled before the advent of modern petroleum geology, but it was known that the lower horizons had been proven productive in one or two wells.

Drillers trained in the spring-pole method did not believe that it was possible to punch a hole down if the cable was attached to a rigid walking beam. Later efforts to drill a hole by turning a piece of pipe around were equally ridiculous. Increasing production by pumping water into the sand was something that even Jules Verne would not have considered. Once upon a time, everybody knew that water ruined an oil sand.

While we laugh at the superstitious fears of former generations of oil men, we tend to feel that we have reached the ultimate in efficiency. But have we? Some of the projects discussed in this article will prove impracticable. Others, though revolutionary now, will be commonplace in 1950. The question, which will succeed and which will fail, will be answered by time.

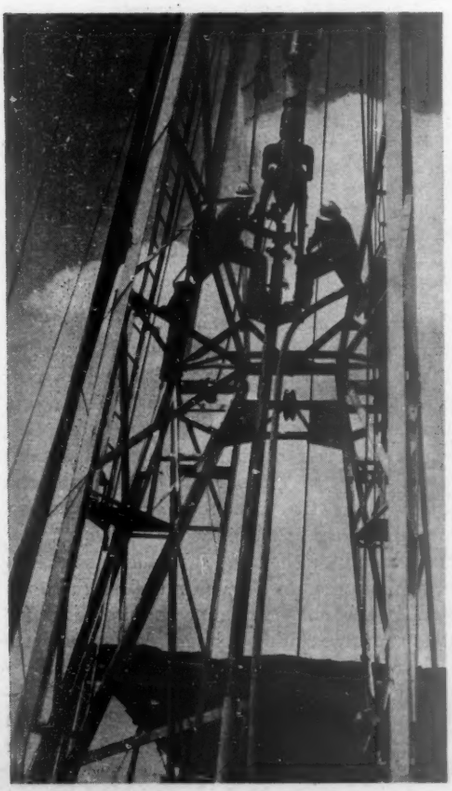
The company tested the Ordovician and got no oil. However, the information obtained by this drilling was instrumental in discovering a new pool a few miles away and also enabled the company to complete the well in the best possible manner.

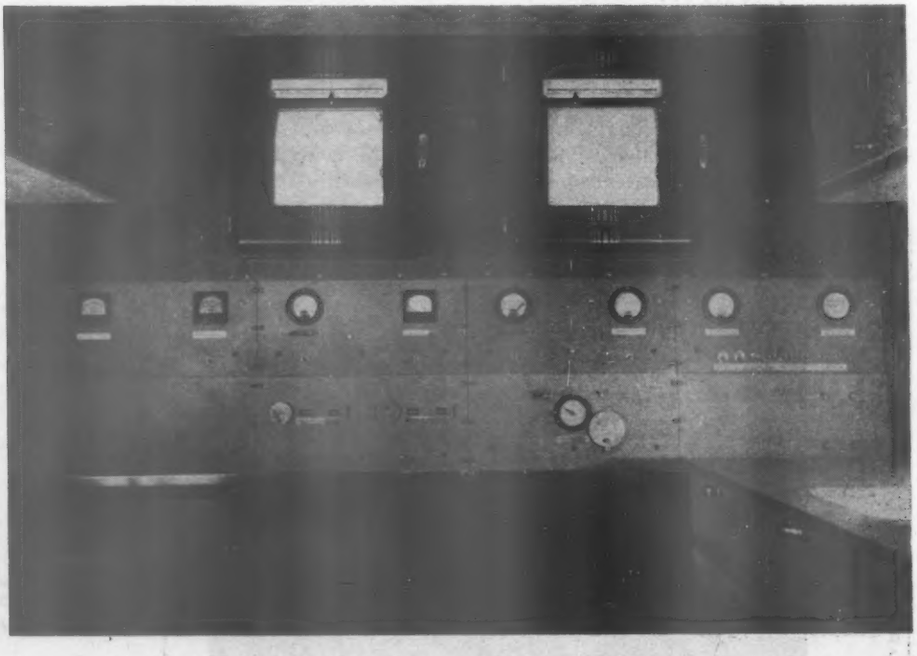
One of the difficulties which will need to be overcome is the reluctance on the part of many to embrace new ideas. The old method is the "safest" in the opinion of many. A niggardly research program and the refusal to try revolutionary ideas or far-reaching improvements will hold back many of the technical men in the development of ideas.

In the case of utilizing information already at hand, or searching for information already in the files, some feel reluctant as they consider this a backward step. Actually, a search of any company's files will reveal much valuable information which was never used or acted on. This condition prompted one engineer to remark that it was useless to write reports until after rewriting the previous information already on file. Often it was found that an investigation was unnecessary as the material was already available.

New tools may be expected to grow out of the war. This has always been the case, as much of the expensive experimentation and proving are done in an effort to develop weapons and to counter the destructive efforts of the enemy. The seismograph grew out of the last war and its effect on prospecting is well known. A similar revolutionary device could well issue from the present conflict. It would be only fitting if something constructive grew out of the efforts to destroy.

An interesting device now being used shows there is progress being made in the effort to





Left: Portable drilling rigs such as this with open-face mast are now common. Rigging up, already simplified by rig unitization and portable equipment, may be reduced to a matter of a few hours. Below: This special trailer, parked alongside the well, houses instruments recording data pertinent to efficient operation of the drilling rig. Such field investigations will lead to development of marked advances in drilling technique as the relative importance of all physical data become more completely understood

identify fluids in the formation, the ultimate aim being the ability to tell whether a formation will produce oil, gas or water and how much. One company runs an instrument containing about $20,000 worth of radium in cased wells to identify the formation behind the pipe.

The radium emits radiations which bombard the formation. A secondary radiation is obtained and measured by instruments at the surface.

Elements behave differently when bombarded by the radium emissions and a curve is obtained which is similar to the porosity curve of the regular electric log run in an open hole. Unfortunately, hydrogen, which gives a distinct curve, is present in both oil and water and so far no positive direct means of interpreting has led to a distinction as to which fluid is in the formation. The problem of formation fluid identification has intrigued a number of competent research men, all hopeful of developing suitable instruments and methods.

Continuous electrical logging while drilling is possible at present although not much use has been made of it. At present a conductor tube attached inside the drill pipe is used for the electric circuit. Elimination of the conductor tube and use of regular drill pipe for the circuit might lead to wider use of this tool.

Development

The largest strides will be made in drilling, a comparatively unexplored field from the technical angle. During the past several years there have been many innovations which have not yet been widely adopted. One of the leaders in this branch will be instruments. There will be a widespread use of rate-of-penetration recorders, tachometers, torque recorders, strain gages and automatic mud analyzers. These are available at the present time and when the economies possible through their use are realized, they will become standard equipment on all drilling rigs. Other instruments now used on rigs will be greatly improved and more widely used. Automatic control of the weight on the bit (which has been in use for a number of years) will be greatly improved and more widely used. Drilling may become as automatic as the refining process.

Recent developments in mud analysis for logging purposes indicate this tool will have far-reaching effect. It has been responsible for the development of many instruments for recording drilling data. One oil company has an experimental unit equipped for recording alkalinity and acidity, salt content, gas content, specific gravity and the viscosity of the mud, the rotary revolutions per minute, torque applied to the drill pipe, mud-pump pressure, gallons per minute of mud being pumped, time interval for the mud to reach the surface, weight on the drill pipe, fluctuation of the mud level in the pit, rate of penetration of the bit, and the depth of the hole. The use which can be made of this information is obvious to any driller as well as the engineer.

Another company, in addition to complete equipment for the mud-analysis work, has a rate-of-penetration indicator which automatically compensates for the weight on the bit. This gives the "drillability" of a formation.

The practice of running casing to test an edge well or a wildcat may be looked on in the none-too-distant future as extremely wasteful. Elimination of casing in such cases requires only the wider use of formation testers. The practice may be to drill down to the potential producing formation, run the tester and leave it in the hole from 12 hours to 2 days or more. At the present this is frowned on because of the danger of getting the pipe stuck; improvement in the mud and a better understanding of what sticks the pipe

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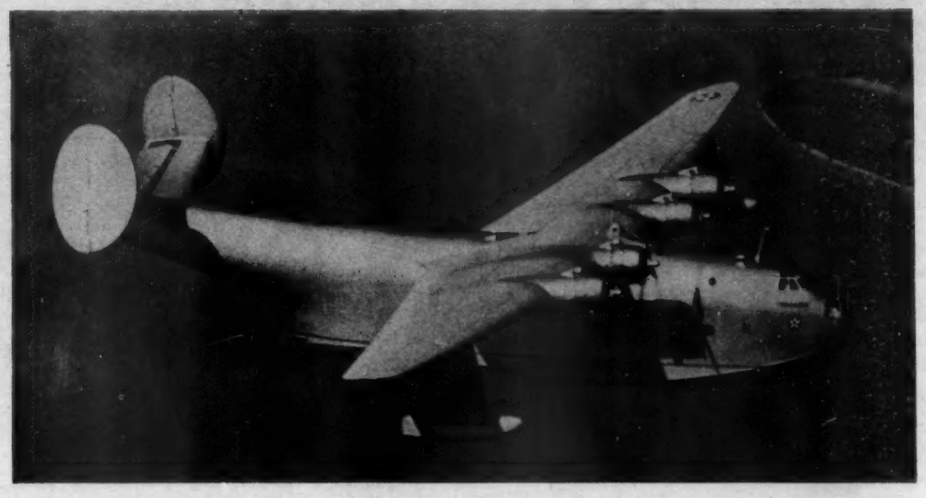


Fuel consumption of this 140,000-lb. airship, the Navy's Martin-built Mars, is a military secret, but is enough to offset that required by several hundred civilian cars. Each of the four motors develops 2,000 hp. Cubic content of the hull is equivalent to a 15-room house

This Week...

PRODUCTION.—Bureau of Mines forecasts no appreciable contraction of crude-oil demand in near future. Contraction of civilian consumption taken into consideration. . . . Frank Phillips criticizes conditions preventing discovery of sufficient oil to protect reserves. . . . Analysis indicates substantial offshore movement of domestic crude, internal demand increased by shrinkage of imports. . . . Navy reported preparing to take over Elk Hills (California) reserve. . . .

TRANSPORTATION.—All tank cars placed under priority-service system. Movement of non-essential motor gasoline assigned low preference position. . . . Railroad shipments to East Coast set another high record, 856,710 bbl. daily. . . . Agitation for extension of War Emergency line to East Coast intensified. . . . Col. E. O. Thompson, Texas Railroad Commission chairman, adds endorsement to West Texas-California pipe line, but it's still strictly a paper project. . . . Pacific Coast shipyard to drop Liberty ship program, build tankers, at Maritime Commission behest. . . .

MARKETS.—Owners of service-station equipment prohibited from removing tanks and pumps until operator and the landowner have been given chance to purchase facilities. . . . Product demand well supported. Reaction from imminence of rationing not yet apparent. . . . Bureau of Internal Revenue reports gasoline-tax revenues off 25.08 per cent in August, for entire country. . . . Shortages of crude at available locations maintains general market in steady position. . . . Producers, industry committees, witnesses before O'Mahoney Senate subcommittee all plug for higher crude-price ceiling. . . .

REFINING.—Adjustment of product prices, compensate refiners for heavier cuts of low-value fuels most serious problem. . . . OPA reported considering pleas. . . . RFC may be asked to reimburse manufacturers for converting to fuel-oil balance. Or fuel-price ceilings may be raised, gasoline lowered. It isn't certain which. Meanwhile, refiners absorb out-of-pocket deficits. Hopes for OPA relief are restrained, based on previous experience. . . .

RATIONING.—Middle West coupon restrictions to start about November 22. . . . Rationing-bank experiment to be given 6-week trial in northern New York. Distributors would bank coupons, make deliveries against deposits. National banks will handle bookkeeping. Private consumer to handle his own coupons. . . . Middlewestern program, in current stages, patterned after East Coast plan. . . . Nonessential drivers to receive fuel for about 3,000 miles of annual travel. . . . Rationed area divided into zones A, B, C, and D, depending on temperature averages, in fuel-oil program. . . . Reduction in fuel-oil consumption aimed at 33 1/3 per cent of normal, an increase over the original goal of 25 per cent. . . .

RUBBER.—Akron tire companies tool up for manufacturing war casings. They will contain only 4 oz. of new rubber, rest of carcas will be of reclaim. Service of 10,000 miles at 35 m.p.h. or less anticipated. . . . Evidence growing that recaps will become more freely available. Authorities coming around to realization that automobiles are essential to transportation economy of the entire nation. . . . William M. Jeffers, rubber administrator, wishes to avoid further restrictions, keep away from regimentation. Thinks mileage rationing, moderate but inclusive policy of rubber replacement will produce best over-all results. . . .

PRIORITIES.—OPC warns operators to refrain from using A-1-a rating in P-98-B when A-2 will do the job, avoid A-2 if no preference assistance is necessary.

Top row: L. A. McVey, recording secretary, aviation gasoline allocation board; R. L. Speer, specialist for gasoline and distillate fuels; Merrill J. Kiser, principal lubricating oil specialist; G. H. Skerritt, senior analyst, aviation gasoline; E. B. McConnell, technical consultant; C. M. Ridgeway, principal negotiator, aviation gasoline; Arthur V. Danner, principal contract negotiation, defense plants; J. H. F. Leonard, principal attorney; Rubin Werlin, principal contract negotiator, privately owned facilities, and E. J. Green, administrative assistant. Seated: Dr. M. R. Mandelbaum, principal specialist, hydrocarbon chemicals; D. W. Wilson, technical consultant; P. M. Robinson, acting division director; Robert B. Cragin, assistant director; Max B. Miller, chief of construction section, and Douglas P. Bailey, chief of operations section.

OPC Refining Division Is Clearing House for War's Petroleum Requirements

By HENRY D. RALPH

WASHINGTON, D. C.—Of the last war it was said the Allies floated to victory on a sea of oil, but victory for the United Nations in this war depends not on a sea of oil but on a number of carefully directed and proportioned streams of oil products, most of which were unknown a few years ago.

It is the function of the Refining Division of the Office of Petroleum Coordinator to see that these petroleum war products are produced in the quantities, qualities, and time schedules of the military strategists of the United States and others of the United Nations.

Converting the oil-refining industry to war has been a herculean task, but it is now well over the hump. The program laid out and prosecuted by the Refining Division is calculated to produce the highly specialized petroleum products required by modern war in quantities and of a technical perfection utterly unavailable to any other nation in the world. At the same time it is laying the basis for a postwar petroleum chemical industry with horizons unlimited.

Huge new specialized refineries have been built or are under construction, and dozens of older and smaller refineries are engaged in producing war products which some of them had hardly even heard of, products such as ingredients of 100-octane gasoline, dimers, codimers, alkylates, ethyl benzene, isobutylene, isooctane, butadiene, toluene, benzene, xylene, petroleum coke, and many specialized types of lubricants. In addition, refinery runs have had to be readjusted to meet the increased demands for distillate and residual fuel oil and the declining consumption of motor gasoline.

These things have not been accomplished by edict or by star-chamber planning. They are the result of close cooperation with the refining industry at all times. Some OPC formal recommendations and directives were issued, but only for the purpose of putting into effect arrangements which had been agreed upon, if not recommended, by the various industry committees concerned.

Unlike some federal agencies, the OPC has followed the practice of treating the oil industry as a unit, consulting with the industry on every turn, and drawing its staff from the industry. The Refining Division has conformed to this pattern. With the exception of the administrative officer, every man in the division was taken out of an important position in the industry—and wants to go back to it as soon as he can. And the former company connections of these men is a good cross-section of the entire refining industry, so that no sniping critics can say that any particular interest has "packed" the staff.

Aviation Fuel Chief Talk

The first and perhaps the biggest job of the Refining Division was to get production of astronomical quantities of 100-octane gasoline. Three years ago when the war began in Europe 100-octane gasoline was still not much more than an experimental fuel, used in only a portion of our then small fleet of Army and Navy airplanes. When the Office of Petroleum Coordinator was created some 15 months ago the now-defunct National Defense Advisory Council was talking about a program for producing 40,000 bbl. per day, but many people though this was beyond both our needs and capacities. Exact figures are a military secret, but in little more than a year the Refining Division has trebled the production of 100-octane gasoline and has plans under way to multiply output by another three times. In addition, specifications were changed to require a rich product, necessitating changes in plans which delayed maximum production somewhat.

Some of this 100-octane gasoline is being produced in big new refineries especially designed for the purpose, while much of it is coming from older refineries converted to this war job. In all, some 60 to 70 refineries are making aviation gasoline or its components, including around 20 which are blending the stocks furnished by others. In each case a contract had to be negotiated for purchase of the gasoline by Defense Supplies

Corp. If a new plant was to be built at government expense a contract was required with the Defense Plant Corp., and if private capital was to be employed a certificate of necessity was required for 5-year amortization for tax purposes. The Refining Division of OPC, acting as the technical adviser for these other agencies, negotiated these contracts and its advice and recommendations have been accepted without question.

Production of toluene from petroleum, needed in making TNT, started out as an Army Ordnance project before OPC was created, but the Refining Division has increased the output by getting smaller refineries into the program. In the same way, synthetic rubber was under the direction of the Rubber Reserve Co., but the Refining Division has recently developed a program for obtaining considerably increased output of synthetic-rubber ingredients through conversion of existing refineries.

Conversion Program Fostered

The history of the 100-octane, toluene, and synthetic-rubber programs is parallel. In each case another federal agency approached the problem from the standpoint of building large new specialized plants, but when war demands increased by geometrical proportions the Refining Division came through with plans for converting existing refineries to do an important part of the job. Not only does the refinery conversion program promise more war materials in a short time, but it also provides an opportunity for scores of refineries to participate in the war effort at a time when it is impossible for them to continue to produce their normal products in the usual quantities.

New types of aviation lubricants and specialized lube oils, waxes and greases for various military purposes are also required in large quantities, and the Refining Division has been instrumental in getting refineries to drop much of their normal business and to learn to produce these vital products. Conversely, the division has worked closely with the Army and Navy and with the British representatives in revising specifications for lubes and other war products so that American refineries could produce maximum amounts of products which would fulfill their functions efficiently.

This is the third of a series on the organization, personnel, and functions of the Office of Petroleum Coordinator for War, dealing specifically with the refining division.

A similar analysis of the production division was published on Pages 24, 25, and 33 in the September 10 issue. The OPC organization as a complete unit was analyzed in the first of this series published September 3.

Functions of the refining division are currently centered on the conversion program—the adaptation of existing facilities to the production of war products with minimum expenditure of critical materials. This story tells how the division coordinates the conversion program on a national basis and breaks down the division into subsections which deal with aviation gasoline, special products, plant facilities, supply problems, and other pertinent questions.

All requests and forecasts for petroleum products to be used by the Army, Navy, and lend-lease clear through the Refining Division, which must see to it that the required amounts are produced on schedule. To accomplish this it frequently has to request or instruct one refinery to make less of this and more of that, or to switch the flow of supplies from one refinery to another. For example, sufficient crude oil is reaching the Atlantic seaboard refineries to enable them to make the war products scheduled for them, but without OPC intervention the right kinds and quantities of crudes would not be properly divided among these refineries.

After war products are produced or scheduled, the Refining Division assists in allocating their delivery, particularly aviation gasoline. This phase of the work is done by the Aviation Petroleum Products Allocations Committee, which is a unit of the Joint Aeronautical Board. W. W. (Chick) White is secretary of this committee and has the chief responsibility of scheduling deliveries of both 91-octane and 100-octane aviation gasoline and apportioning it among such uses as Army, Navy, commercial aviation, lend-lease, and Latin American exports.

An important part of securing maximum production of petroleum war products has been the negotiation of arrangements for the cross-exchange of patents and technical information, and the Refining Division has worked up two formal OPC recommendations on this subject, Nos. 41 and 48.

Set Up Like Refinery

In form of organization, the Refining Division is set up much like the management of a large oil refinery, with sections devoted to operations, research, supplies, and plant facilities.

General supervision of the operations of the Refining Division is given by Bruce W. Brown, assistant deputy coordinator, formerly with Standard Oil Co. of Indiana. A technologist himself, Mr. Brown has taken an intense interest in all phases of the program of securing petroleum war products, and though he has other administrative duties he gives most of his time to this program. All matters completed by the Refining Division are passed on by Mr. Brown before they go to the coordinator or to another government agency.

From the time OPC was created until about a month ago the director of the Refining Division was Wright W. Gary, who had been an independent technical consultant on refinery construction, and who resigned to become president of the Filtrol Corp. of California. The administrative duties now fall chiefly on P. M. (Pinkey) Robinson, who as senior assistant director now has the additional title of acting director of the division. Mr. Robinson formerly was with Pennzoil Co. and came to Washington 2 years ago as a tech-

(Continued on Page 29)

ORGANIZATION CHART OF THE REFINING DIVISION OF THE OFFICE OF PETROLEUM COORDINATOR

DIRECTOR
P. M. Robinson, Acting

ADMINISTRATIVE ASSISTANT
E. J. Green

ASSISTANT DIRECTOR
R. B. Cragin

ATTORNEY
John Leonard

OPERATIONS SECTION
D. P. Bailey chief
Joseph A. Costello
D. Flann
R. P. Horner
R. L. Speer
H. A. Stiles

PROCESS DEVELOPMENT SECTION
M. R. Mandlebaum, acting chief
J. P. Withers

SUPPLY SECTION
R. B. Cragin, chief

Lube Oil, Wax and Greases
M. J. Kiser
C. A. Mapes
C. R. Smith
W. B. Storey

Aviation Gasoline
T. L. Apjohn
E. L. Arnold
E. A. Dingee
L. A. McVey
C. R. Ridgeway
G. H. Skerritt
W. W. White

NEW-FACILITIES SECTION
George L. Parkhurst, chief

Privately Owned Facilities
Reuben Werlin

Defense Plants
A. V. Danner
R. M. Cornforth
J. W. Griswold
Stanley Wilk

CONSTRUCTION SECTION
Max B. Miller, chief
George Gibson
C. U. Marks
R. Reuter
Leo F. Connell
B. M. Fitzgerald

TECHNICAL CONSULTANTS
D. W. Wilson
E. B. McConnell

Study Shows Crude-Oil Output Moving Up To Correct Underestimates

By W. V. HOWARD

Analysis of Bureau of Mines reports on production and consumption of crude oil indicates that the demand for crude will probably remain near present high levels, despite rationing. The question of the availability of supplies of crude to meet a continuation of present demand will be discussed later.

ANAYLZING the demand for crude oil in wartime is far different from preparing peacetime estimates. If there is a decline in consumption for one or more products in normal times, the producer can estimate the effect that the change will have on production. During a war, this reduction may be offset by increased demands for the same products by military and naval requirements. Wartime conditions which disturb coastwise transportation of domestic crude will have a decided effect on exports and imports as well. The data on which accurate estimates can be made are necessarily unavailable except to the Government so that the producer is compelled to plan his activity at short rather than long range.

The table presents an analyses of the demand for crude based on Bureau of Mines reports, except for August 1942. The figures presented are either taken directly from the bureau's monthly reports or are calculated from them. Among other interesting facts is the underestimate of demand between April and July by government agencies based upon expectation of the influence of rationing gasoline with the result that there was withdrawn from storage an average of 162,000 bbl. daily during the period. The minimum daily average production of April was 568,000 bbl. below that of February while the demand for crude was only 244,000 bbl. below February's demand.

Daily average production for the first 8 months of 1942 has been 28,000 bbl. and 34,000 bbl. higher than during the same period in 1940 and 1941. During the first 8 months of 1940, refinery runs were low and an average of 104,000 bbl. was added to storage. In 1941, conditions were reversed and 55,000 bbl. were taken from storage daily. So far in 1942, supplies of crude have almost balanced demand. Refinery runs are down 147,000 bbl. from the equivalent period of 1941 but imports are also down 83,000 bbl., indicating a domestic demand of 64,000 bbl. less than in 1941. As withdrawals from storage account for 54,000 bbl. of this decline, stability of production is indicated. However, the export demand has risen sharply. Exact figures are not available as "exports" and "fuel and losses" are now reported together. "Fuel and losses" covers known consumption of crude together with an unknown quantity which is not otherwise accounted for. With lower consumption of fuel for drilling and in refineries, it might be expected that the 1942 figure for "fuel and losses" would be lower than the 1941 figure. The table shows that if the 1942 figure is assumed to be the same as 1941 there is an increase in exports of 44,000 bbl. daily.

Since February 1942, imports have fallen from 110,000 bbl. daily to zero and at the same time apparent exports have risen from 79,000 bbl. to 169,000 bbl. Despite rationing, refinery runs have increased 105,000 bbl. from March and 224,000 bbl. from the low in May, indicating an increase in military and export requirements. The implication is that crude production will probably continue at about present levels and that the restrictions imposed on civilian use of oil will be balanced by increased military and lend-lease requirements. Without further restriction of civilian consumption, increased output is necessary.

TREND OF CURRENT REQUIREMENTS FOR DOMESTIC CRUDE OIL

								Exports + fuel and losses — imports		
1940:	Production	From storage	To storage	Imports	Total supply	Refinery runs	Fuel and losses	Exports	East of California United States	California
January	3,650	...	29	63	3,684	3,436	112	136	185	111	74
February	3,747	...	158	75	3,664	3,509	41	114	80	19	61
March	3,873	...	216	94	3,751	3,551	70	130	106	42	64
April	3,868	...	232	106	3,742	3,566	34	142	70	16	54
May	3,816	...	122	132	3,826	3,607	61	158	87	20	67
June	3,723	...	4	123	3,844	3,608	46	190	113	43	70
July	3,653	...	49	128	3,732	3,481	70	181	123	51	72
August	3,565	...	24	136	3,677	3,508	34	135	33	—8	41
September	3,645	38	...	130	3,813	3,592	79	142	91	24	67
October	3,659	...	24	122	3,757	3,529	58	170	106	33	63
November	3,564	23	...	131	3,718	3,512	79	127	75	15	60
December	3,565	...	30	153	3,688	3,539	82	67	—4	—44	40
1941:											
January	3,569	26	...	90	3,685	3,570	61	54	25	—22	47
February	3,600	...	42	120	3,678	3,587	43	48	—29	—79	50
March	3,639	...	63	123	3,699	3,582	53	64	—6	—66	60
April	3,703	...	12	128	3,819	3,704	32	83	—13	—46	33
May	3,773	126	...	125	4,024	3,853	31	140	—46	—102	56
June	3,834	101	...	144	4,079	3,865	83	131	70	18	52
July	3,815	119	...	172	4,106	3,909	80	117	25	—27	52
August	3,915	186	...	140	4,241	4,019	116	106	82	41	41
September	3,982	117	...	155	4,254	4,049	108	97	50	—1	51
October	4,069	77	...	152	4,298	4,089	107	93	48	14	34
November	4,112	2	...	158	4,272	4,051		221	63	5	58
December	4,139	...	103	157	4,193	4,032		161	4	—37	41
1942:											
January	4,138	...	214	115	4,039	3,840		197	84	20	64
February	4,070	...	261	110	3,919	3,778		141	31	—34	65
March	3,693	...	32	66	3,727	3,567		160	128	49	79
April	3,502	136	...	37	3,675	3,496		179	142	85	57
May	3,554	103	...	28	3,685	3,448		237	209	140	69
June	3,619	105	...	16	3,740	3,513		227	211	152	59
July	3,606	203	...	4	3,813	3,599		214	210	163	47
August	3,935	...	32	0	3,903	3,672		231	231	...	...
Mean averages first 8 months:											
1940	3,737	...	104	107	3,740	3,533	59	148	100	33	67
1941	3,731	55	...	130	3,916	3,761	62	93	25	—24	49
1942	3,765	1	...	47	3,813	3,614		199	152	*72	*55

*7 months.

November 22 Tentative Date Set for National Rationing

WASHINGTON, D. C.—Nation-wide rationing of gasoline will be handled by the Office of Price Administration on the same basis as the consumer-coupon system which has been in effect in the 17 eastern states since July 2.

This was announced September 25 by Rubber Director William M. Jeffers. The announcement ended a controversy between OPA and the Office of Defense Transportation over which one should administer the program. While OPA is the rationing authority for all other commodities, handles the East Coast gasoline rationing and has local ration boards throughout the country, the report of the Baruch committee recommended that ODT handle gasoline rationing on the theory that it is a transportation problem rather than a gasoline scarcity. ODT already has announced a system of control of trucks and other commercial vehicles (General Order ODT 21) which involves a degree of gasoline rationing, and this will be continued. ODT also is to review the OPA gasoline-rationing system for passenger cars from the standpoint of effects on transportation.

Tentative date for starting rationing has been set for November 22. Because of the tremendous work of printing ration coupon books, application blanks and other forms, and of preparing local boards for the job of registration and administration, some OPA officials doubt that all preparations can be completed by that date.

Eastern Plan Followed

The nation-wide system will be similar to that used in the East, with a basic allowance for 2,880 miles per year plus supplemental rations for occupational necessities. These supplemental rations, however, will be tightened up all over the country. Two other features will be added—a maximum speed limit of 35 miles per hour, and mandatory periodic tire inspection.

In announcing the rationing plan, Mr. Jeffers issued a directive which said:

"1. The Office of Price Administration is hereby directed and authorized to institute nation-wide gasoline rationing on the same basis as the gasoline-rationing program now existing in the eastern states.

"2. It will be understood that after the installation of a nation-wide gasoline rationing, the Office of Defense Transportation will review the program from the standpoint of its effects upon the transportation service of the nation.

"3. The existing arrangements between the Office of Defense Transportation and the Office of Price Administration relative to rations for commercial vehicles in accordance with General Order ODT 21 will be continued and extended throughout the nation."

With his directive, the first as the nation's rubber director, Mr. Jeffers issued this statement:

"As rubber director I am charged with three principal duties: First, to provide the rubber for military needs; second, to provide tires for essential civilian driving and rubber for essential manufacturing needs; and third, to accomplish these two requirements with as little disturbance as possible to the economic life of our citizens.

"The rubber for our military needs — and to meet the commitments made to our allies—must and will be provided. The rubber for essential civilian needs must also be provided.

"The third duty, that of keeping our economic life from breaking down, is in the hands of each of the 27,000,000 civilian drivers in the nation—each one is a soldier in this rubber war—and I believe all will be volunteers.

"To accomplish this it is necessary for all of us to start on a common basis and to stick to it for the duration. I believe it can be done most fairly by fixing a maximum speed limit of not to exceed 35 miles per hour and by nation-wide rationing of gasoline.

"Most of all, I want to avoid the necessity for any additional curtailment of either the speed limit or the gasoline-rationing programs that now are proposed. I want to avoid any enforced regimentation. I ask you to be your own policeman. I ask—and I am sure we will have—the wholehearted support and cooperation of all citizens. I know everybody is anxious to help this country win this war.

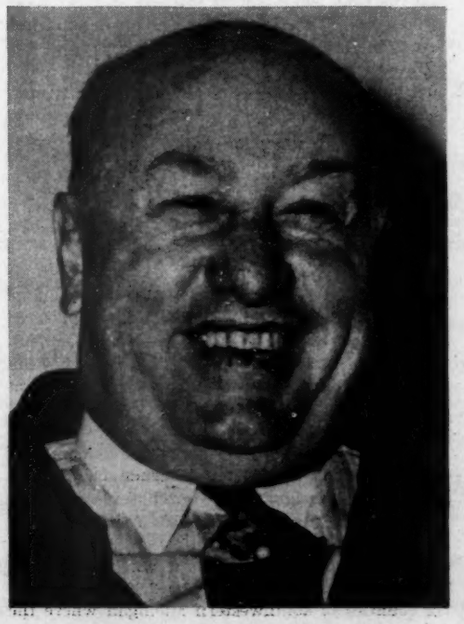
"The OPA coupon plan for rationing gasoline effective in the East since July 22 provides a basic ration of 2,880 miles of driving a year. Supplemental monthly rations permitting a grand total of up to 470 miles of driving for occupational purposes are issued to autoists who show vocational need for this driving, and who also show they have formed a car-sharing club. Only a few groups of drivers held essential to the war effort are included in a preferred mileage class which allows more than 470 miles a month."

•

Prompt Application of Rationing Ordered By Jeffers As First Act

WASHINGTON, D. C.—Earliest possible institution of coupon rationing on a national scale was ordered last week by W. M. Jeffers, rubber administrator, as his first official act in the newly created office.

Thus, Mr. Jeffers accepted one of the cardinal recommendations of the Baruch investigating committee which, earlier in September, reported the rubber-supply situation is so critical that enforced conservation of automobile tires is a prerequisite to maintenance of the country's transportation system.



WILLIAM M. JEFFERS

Mr. Jeffers, 66, of Omaha, Neb., temporarily interrupted his 52-year continuous service with the Union Pacific Railroad, which employed him as a call boy in 1890, to accept the appointment as rubber administrator. Until Donald M. Nelson, chairman of the War Production Board, acting with approval of the White House, called Mr. Jeffers to Washington he had never drawn a pay check from any organization other than Union Pacific which he headed as president when "drafted" into government service.

When the territory extending from Cheyenne to Ogden, Utah, was consolidated into a single division, in 1911, the superintendency went to "Bill" Jeffers, and he went into the front rank of rising U. P. employes in 1915 when he was named superintendent of the Nebraska district. On November 1, 1915, Mr. Jeffers was named general superintendent, with supervisory authority over all divisions of the Union Pacific Railroad.

Less than a year later he was named general manager, on June 3, 1916, and on July 1, 1917, his title became "vice president and general manager." Shortly afterward, the railroads of the country were placed under the U. S. Railroad Administration and in the new setup he again was called "general manager."

On August 11, 1932, the road's board of directors created the new post of "executive vice president" and assigned Mr. Jeffers to it, including supervision over traffic and all other activities of the railroad, and indicating clearly that even then his superior officers were grooming "Bill" Jeffers for the presidency of the great railroad he loved so well.

His elevation to the presidency on October 1, 1937, was the fruition of a dream he long had cherished.

State Capitals

California Operators Asked To Support M-68 Revision

A plea to all California operators to report information as to the number of idle producible wells and the amount of production equipment they have on hand, so that a proposed amendment to Conservation Order M-68 to permit maximum production of heavy oil can be substantiated, has been made by R. P. Huggins, chairman of the Conservation Committee of California Oil Producers.

"In the Pacific Coast area, the rapidly rising demand for finished fuels has placed a growing burden on the California oil fields," Mr. Huggins said. "In order that these fields may be utilized at least to the extent of their maximum efficiency in supplying raw material for maximum quantities of petroleum products essential to the war program, it will be necessary to amend Order M-68 in such a manner as to provide for the installation of available artificial lifting equipment to that end.

"The need for such an amendment to Order M-68 is urgent and vital, not only to implement the entire West Coast oil industry in the job of effectively advancing the war effort, but also to provide a much-needed tool for the more efficient conduct of production by each individual operator. With this thought in mind, each operator is urged to give this project his vigorous attention as a matter of primary importance to himself, to the industry, and to the nation," Mr. Hughes said.

A questionnaire to develop the needed information has been furnished each operator in the state, with the request that he return it at the earliest possible time, so that the information thus gathered can be tabulated and forwarded to Washington as the basis for a recommended amendment to Order M-68.

Pacific Coast Stations Closed at Accelerated Rate

The consistent increase in service-station mortality, closed on the Pacific Coast because of decreased gallonage and higher operating costs, continued during August. The District 5 marketing committee reported an additional 429 stations went on the inactive list in August. A total of 2,816 service stations have been shut down during the first 8 months this year, in California, Oregon, Washington, Arizona and Nevada. Data show 2,120 stations closed in California, 213 in Oregon, 283 in Washington, 148 in Arizona and 52 in Nevada. This represents a substantial acceleration in suspensions during August. Employment of women in service stations has not worked out satisfactorily in practice because of the type of work and the fact that migration to defense plants, notably to the various plane factories, has caused a high rate of employe turnover.

Michigan Geological Survey Checking Old Wells for Scrap

LANSING, Mich.—In an effort to aid oil and gas development companies and make use of every available foot of used casing, the Geological Survey, is now checking and reporting all wells that may have salvage pipe.

A 10-page report, available to producer, contractor, pipe pullers, etc., has just been compiled by the survey listing several hundred wells that are either inactive or abandoned and which have recoverable pipe. The report shows the owner, lease, location and amount of pipe still in the hole.

This report will be revised monthly through surveys made by field men in the various field branches of the survey.

Kansas May Raise Acreage Factor in Hugoton Field

The Kansas Corporation Commission has prepared a tentative order providing a system of graduated allowables for gas wells in the Hugoton field. Formerly, allowables were on the basis of 160-acre tracts, and larger tracts with only one well got only the minimum allocation. Provisions of the new order are not completely worked out, but a graduated acreage allowance is favored, increasing quotas 5 per cent on the basic allowable for each 10 acres in excess of 160 surrounding one well up to 640 acres, the gas-well-spacing pattern of M-68. This would make possible a theoretical increase of 240 per cent of base allowable, but it is understood that the maximum increment will be set at 124 per cent, and that other factors besides acreage will be incorporated.

The Office of Petroleum Coordinator is asking the Oklahoma commission to put in an identical order as soon as possible to cover wells close to the Kansas border.

Ratable taking of gas from the entire Hugoton district of southwestern Kansas and Texas County, Oklahoma, has been recommended to the Corporation Commission of the two states by the OPC.

Several weeks ago the WPB and OPC issued a directive prohibiting further drilling in the area, except by special authorization. It was stated that more than 20 wells in the area had no pipeline outlet.

A survey last week showed that six wells on the Oklahoma side were shut in; there are 40 producers in the Guymon sector, some of them supplying the carbon-black plant of the General Atlas Carbon Co. at Guymon.

Under present operation of the field, the Kansas commission is prorating production to about 1.4 per cent of potential of the wells. In Oklahoma the wells are permitted to produce up to 25 per cent of potential under the state law.

This differential has been a point of contention for some time, and it has led to greater development in the Guymon sector during the last 2 years.

Observers are of the opinion that if the OPC puts on the pressure, part of the Oklahoma market will be transferred to Kansas, which would mean a drastic reduction in production and cessation of development.

Michigan Crude Allowable Left at 64,721 Bbl. Daily

MOUNT PLEASANT, Mich.—The approximate allowable of 64,721 bbl. daily production from Michigan oil fields will be continued in October. The Office of Petroleum Coordinator last week set the Michigan production quota this month at 65,700 bbl. daily. Michigan production has lagged behind OPC quotas since June.

Out of a total forecasted market demand for 60,422 bbl. daily of Michigan crude in October, 45,277 bbl. is designated by purchasers for Michigan refineries and 15,145 bbl. for out-of-state movement.

The state oil advisory board will apply for a blanket exemption to M-68 for 2,000-ft. wells in six counties of southwestern Michigan where the state seeks a 20-acre spacing pattern.

Spacing Exception Sought for Arkansas Condensate Field

TEXARKANA, Ark.—Specific permission to develop the new condensate field in Miller County, Arkansas, on a spacing pattern of one well to each 160 acres will be sought by the Arkansas Oil and Gas Commission. O. C. Bailey, chairman of the commission, was instructed to present data supporting the 160-acre application before the Office of Petroleum Coordinator in Washington, D. C.

The Arkansas commission, at its meeting here last week, established a production schedule for October averaging 73,107 bbl. daily, a reduction of 1,294 bbl. from the allowable prevailing in July, August and September.

The proposed spacing program in the Miller County field would permit the drilling of 18 wells in the estimated productive area totaling 2,800 acres. The commission declared by resolution that the gas would be used for war purposes and that the 640-acre spacing would "absolutely retard development."

Hearing Favored on Fixing Texas Lease Allowables

AUSTIN, Tex.—That a state-wide hearing for operators should be held to determine the advisability of establishing lease allowables as a basis of production allocation in Texas is the opinion expressed by Beauford Jester, new member of the Texas Railroad Commission.

Mr. Jester now holds the deciding vote on the question of instituting lease allowables since Ernest O. Thompson, chairman of the commission, has indicated he favors the plan, while Olin Culberson, other member, has disapproved it. So far Mr. Jester has not committed himself to the support of the position of either.

Pending decision, Mr. Jester has been attempting to get opinions on the subject of as many oil men as possible and has requested all to place their views in writing.

Fred C. Platt Made Montana Oil and Gas Inspector

Fred C. Platt, petroleum engineer and geologist, and pioneer Montana oil operator, Shelby, Mont., has been appointed state oil and gas inspector for the Montana Railway State Public Service Commission, Helena, Mont. He succeeds T. H. Harriman, who resigned to become an independent operator.

Mr. Platt came to Montana in 1920 to manage operations of Gladys Belle Oil Co. He left this company in 1921. For a number of years he operated an oil information bureau, but quit this to engage in general petroleum engineering and geological work.

Louisiana Allowable Set At 325,724 Bbl. Daily

BATON ROUGE, La.—The Louisiana Conservation Commission last week issued a proration order for October authorizing daily production of 325,724 bbl., an increase of 3,725 bbl. over the September rate. The Office of Petroleum Coordinator certified a daily quota of 337,200 bbl. daily to Louisiana during October, including all petroleum liquids.

The October allowable authorizes production of 91,159 bbl. daily in North Louisiana and 234,565 bbl. in South Louisiana.

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Makeshifts Must End

It might be well for all concerned—and there is no one in the oil business and at Washington who shouldn't be—to give consideration to what is happening in petroleum supplies within the principal interior areas of this country.

It doesn't require exhaustive investigations of specifically appointed committees to find out that the production trends of the past several months cannot continue much longer without this industry and its military and civilian customers running into trouble.

The changes in crude-oil supply since Pear Harbor are briefly summarized in the following table based on daily averages in barrels last week and the week which included December 7, 1941:

	Last week	Dec. 13, 1941
Illinois, Indiana, Kentucky	277,770	384,195
Oklahoma-Kansas	665,450	671,925
Eastern fields—Michigan	160,500	167,750
Rocky Mountain states	125,675	112,940
Total	1,229,395	1,336,810

These data reveal that despite the increased supply responsibilities of these interior areas, following the drastic curtailment in coastal tanker shipments, total crude production has declined from the December level. The demands on these fields will continue to expand and further declines in output are more probable than increases unless operating practices are changed.

Within this interior section there are 137 operating refineries. Since December they have increased their crude runs to stills 30 per cent despite a decline of 10 per cent in refinery operations for the entire country.

Right now most of these refineries have outlets which would justify further expansion if they were able to secure the crude oil. They can't get the crude from the fields adjacent to the plants and the large pipe-line systems do not have the connections nor the trunk-line capacity to increase deliveries from other states. To supply the demands of the past few months, it has been necessary to withdraw 18 million barrels of crude oil from the tank farms of the interior.

Both the causes and remedies for this situation should be readily apparent. Outstanding as to the causes is the fact that while 360 wells were completed in these four areas the week of December 13, 1941, the completions last week totaled 212.

Past performance substantiates the contention that more oil would have been found under normal operating conditions and the needed facilities would have been built up to transport the crude to the markets. Crude supplies will not now be expanded unless restrictions on exploratory and drilling operations are modified and operators are given the incentive of an adequate price.

Furthermore it is certain that any possible expansion in the near future north of the Red River will not be sufficient to meet the record demands that have come to the interior sections of this country from war developments. The remedy for this situation lies in the tapping of existing and new sources of supply in Texas.

Building new arteries to connect to existing lines in the Mid-Continent will not be sufficient. The new systems must extend from the fields to the points of consumption. The government-sponsored pipe-line projects and the rearrangements in shipments now under way are helpful but they fall short of solving the industry's problem of assuring that our war economy will have sufficient future oil at points where it will be needed.

The oil business during the first 10 months of war has been busy making overnight makeshifts in its operations to meet emergencies. It is now mandatory that thought and action be given to a long-range program which will deal realistically with petroleum problems including the materials, manpower, and the price required to furnish supplies for a long or a short war.

Neglect of Oil Finding Places Future Reserves in Jeopardy

This extended abstract of an address by Frank Phillips, president of Phillips Petroleum Co., chairman of the District 2 general industry functional committee, and member of the Petroleum Industry War Council, criticizes factors retarding exploration for and discovery of new oil fields.

Price ceilings incompatible with costs of finding and acquiring new reserves, lack of government foresight in meeting the transportation problem, and failure to support early efforts of the petroleum industry in the manufacture of synthetic rubber are specifically blamed by Mr. Phillips for the current uncertainties.

In unpublished portions of his paper, Mr. Phillips emphasized that expressions herein are purely personal and are not related to his government and industry offices. He accepts nation-wide rationing with specific reservations.

DES MOINES, Iowa.—Prediction that another national scandal will break when the public realizes that available daily withdrawals of crude oil from existing wells can no longer keep pace with the enormous war demands was made here September 25 by Frank Phillips, president of Phillips Petroleum Co.

"Restrictions," declared Mr. Phillips in addressing the Des Moines Chamber of Commerce, "have been placed upon the oil industry which curtail drilling so much as to jeopardize the finding of adequate future reserves.

"Price ceilings on crude oil," he continued, "have been fixed at levels far below the cost that oil companies face in finding and acquiring new replacement reserves.

"There is undoubtedly an adequate supply of oil in this country to meet the war needs of the United Nations, but it is necessary that a constant program of exploratory development be carried on to find these reserves as they will be needed. The risks involved in exploratory or test drilling are so great that operators cannot afford to make the required investments with present oil prices and present rates of taxation.

Shortage Seems Incredible

"It seems incredible that there should be a petroleum product shortage anywhere in the United States when we have over 60 per cent of the world's oil production. Nevertheless, as a result of more bungling, that is the case today in the populous Atlantic seaboard.

"Foreseeing this situation more than a year ago Harold L. Ickes, petroleum coordinator, recommended the construction of large pipe lines from the Texas oil fields to the Atlantic Coast. Not until after a serious shortage actually developed could the project be revived. A 24-in. line, extending from East Texas to Illinois is now under construction. Had this line been approved when first recommended by Mr. Ickes, it would be in operation today. Right here I desire to pay tribute to the outstanding ability and performance of Mr. Ickes. He is sincere, uncompromising, and experienced. He is one of the hardest workers to be found anywhere in this country today—certainly within government itself.

"The challenge of the East Coast oil crisis was met promptly by the petroleum industry. Whereas, before this year, 110,000 tank cars were engaged in transporting petroleum and its products within the United States and less than 1,000 were on routes to the Atlantic coastal areas, today more than 70,000 cars are in that service. Rail movements of petroleum and its products to the East have increased from 60,000 bbl. a day on January 1 of this year, to 850,000 bbl. a day at present and should reach nearly 1,000,000 bbl. a day by the end of this year.

"You have recently read about the Baruch committee's report on the nation's rubber situation and gasoline rationing. The committee found that no shortages of gasoline currently existed outside presently rationed areas where supplies have been depleted by interruptions in peacetime transportation methods. If present rubber rationing regulations are to continue unchanged, the committee points out no economic justification for extending gasoline rationing throughout the nation. This conclusion conforms with those in my recently published statement, 'Solve the East's Petroleum Problem Without Rationing the Midwest,' which incidentally was approved in principle by the petroleum coordinator's office.

"However, the committee was not content to accept things as they are. Even in the face of the serious rubber shortage found to exist, the committee realized that a collapse of civilian transportation must be averted by relaxing present rubber rationing regulations to permit the release of a greater number of recaps and tires than at present permitted.

"The committee is rightfully unwilling to risk the waste of any such additional allocations of precious rubber. Therefore, after searching for suitable safeguards, it concludes that the gasoline ration coupon must do the job of controlling car travel, to regulate tire wear and conserve rubber. The result undoubtedly will be fewer car-miles of daily travel at first but certainly there will be more total car-miles later on, when millions of cars otherwise would have been idle through inability to recap or replace present tires.

"If the Baruch committee is supported in its recommendation to make available these additional recaps and tires, I concur in the suggestion that gasoline rationing be put on a nation-wide basis. Otherwise, I contend, as heretofore, that no adequate economic justification for nation-wide gasoline rationing exists.

"When the Japs took Malaya and the Dutch East Indies, America lost 97 per cent of its rubber supply. There are many unpublished facts that would help to explain the confusion which, from the very beginning, has marked this nation's effort to obtain synthetic rubber needed to replace our former supply of natural rubber from the Far East.

Early Overtures Rejected

"As early as 1940, our own company laid before Rubber Reserve Co., a government subsidiary, a specific program for making synthetic rubber. We urged that other companies also be interested in the program. Obviously confident that Singapore was impregnable, and that the Japs could be subdued in a few weeks should they be so audacious as to start a war, officials did not appear concerned and the company's proposal was not acted upon. Failing to get our plan across, we constructed with our own money a plant to manufacture butadiene, which is the basic raw material used in the main types of synthetic rubber. Furthermore, we joined a rubber company to build a full scale commercial plant for producing finished rubber using butadiene.

"That plant has operated continuously ever since and the last time I made a comparison, was still the largest plant in the United States, and perhaps in the world, manufacturing rubber from petroleum. Tires made from rubber it has produced are on the highways today. The day that war was declared, this plant was operating at considerably less than its full capacity, as all available warehouse space was used and the Government had not yet devised a plant for permitting full use of even those facilities which were already in operation.

"After the raid on Pearl Harbor there was a decided change in governmental attitude. Phillips Petroleum Co. and other companies were called to Washington and instructed to proceed with all possible speed. With a background of 10 years of related research and 2 years of actual experience in the manufacture of butadiene and synthetic rubber, Phillips Petroleum Co. proposed to build plants to manufacture butadiene and styrene from petroleum and a plant to convert these products into 50,000 long tons of synthetic rubber a year, enough to make 11,000,000 tires.

"At that time, an affiliate of Phillips Petroleum Co. was the country's largest manufacture of rubber from petroleum. In spite of this experience we were informed that we could have no part in the final operations of manufacturing rubber, but would be permitted to make only butadiene and styrene. Operation and control of plants for

(Continued on Page 29)

Oil Companies Continue Drive To Collect Scrap Materials

By HARRY F. SIMONS

THE second phase of the campaign to make all scrap materials in the oil fields available to the War Production Board for use in manufacturing munitions and implements of war is now under way. Ever since Pearl Harbor, many companies have been cleaning up leases and dumping the metal and rubber into the scrap heap. Much of the more apparent scrap has already been delivered and the remainder will not be long on its way to the junk dealer or community gathering bin.

Seriousness of the scrap situation makes a recanvassing of the available junk-material supply necessary. All metal and rubber items for which a specific use cannot be found should be relegated to the scrap heap immediately, according to those directing the campaign. In other words, the days are gone of laying obsolete, replaced or broken equipment to one side with the thought that it might come in handy later. In some cases it is well to evaluate the material on its present functional merits and if it is not doing some necessary work, it should be turned in.

The amount of steel and iron in the oil fields which can be scrapped is still substantial according to those participating in the drive. Everyone knows the necessity for gathering this material and putting it into service but getting action on the matter immediately is of primary importance. Awakening of the men in the industry, including superintendents, foremen, pumpers, roustabouts, drillers and roughnecks, to realize just what constitutes scrap material is the necessity now, according to R. B. Roark, Shell Oil Co., Inc., chairman of the petroleum industry committee for Oklahoma. Others directing the campaign include Art Olson, Olson Drilling Co., chairman of the drilling contractors division, and Ed M. Dons, Mid-Continent Petroleum Corp., chairman of the refinery group.

Chief Salvage Sources

The following list includes the principal items believed by men in charge of the scrap campaign to be available in considerable quantities in the oil fields:

Cable tools.—Obsolete (big hole) bits and stems, broken jars and wrenches worn under reamer lugs, discarded bull wheels, calf wheels, sand reels, broken counterbalances, old steam engines, wire lines, etc.

Rotary drilling rigs.—Discarded rotary tables, traveling blocks, crown blocks, sheaves, kelly joints, drill collars, rotary hose, pumps, steam engines, drill pipe and obsolete bits, reamers, drilling valves, blowout preventers, old drilling lines. Tool joints cut off the drill pipe when making previous replacements should be gathered up and turned in immediately. On active rigs, remove all metal from counterweight boxes and replace with sand or water.

Producing properties.—Broken sucker and pull rods, counterweights, engines, separators, tanks, discarded pumping jacks, band wheels, powers, and fences (unless they are essential for preventing injury to personnel or live stock). All weight boxes or dummies used to counterbalance wells should be inspected and the metal junk in them replaced with rocks or dirt.

Gasoline and gas-lift plants.—Worn-out scrubbers, valves, pipe, fittings, cooling coils, engine and compressor parts, heat exchangers, etc. Big tonnage here is in discarded compressor cylinders and heads.

Refineries.—Valve bodies, tubes, pipe, structural steel, plate trimmings, compressor heads, pumps.

General.—Decorations not needed. (Old-style rock-bit cones used for ornaments on top of fence posts and to line walks and gardens are excellent candidates for the scrap pile.) Fences when not needed; these are often made old sucker rods and pull rods and amount to a considerable tonnage. Mementoes of difficult fishing jobs and oddities of the oil field can now serve a useful purpose if they are placed on the junk pile.

What to Do With the Scrap

Some operators have preferred to segregate the iron from the steel and sell it separately. Others dump all on one pile. Copper and brass should be handled separately as they are more valuable and the demand for those metals is greater.

After a pile of scrap has been accumulated the easiest way to dispose of it is to call the nearest junk dealer, according to those in charge of the campaign. There is a junk dealer in, or near, every oil field. When preferred, the scrap may be delivered to the nearest city or county scrap campaign headquarters. If the scrap is accumulated in an isolated area and transportation to a gathering point is a problem, notify the nearest WPB office by letter that the scrap is available and give its location. Knowledge of where scrap is for future use is extremely important to the war effort.

Above all, campaign directors point out, do not tie up large items of equipment for the sake of salvaging a few parts. Reclaim the parts which will be of some use and get rid of the remainder. Many old engines are piled up on leases because the crankshafts may be of some use at a later date. Dismantle the engine to reclaim the shaft and throw the remainder on the scrap heap, directors urge. The same is true of valves; if parts are available, repair the valve now; if not, throw in on the scrap pile so it can be thrown at the Japs and Nazi in the form of shell or shrapnel.

Rivkin

Ralph B. Roark, Tulsa, vice president of Shell Oil Co., Inc., in charge of Mid-Continent area operations, is Oklahoma oil-industry chairman of the drive

PRP Certificates for Fourth Quarter Being Returned

WASHINGTON, D. C.—Production Requirements Plan certificates for the fourth quarter of 1942 are being returned to applicants, it was announced this week by Ernest Kanzler, director general for operations.

The applications have been analyzed, the total estimated requirements have been balanced against available supplies and material, and the program-adjustment committee has made its recommendations for cutting back the requirements to balance the supply.

It is expected that the certificates of those companies with major war contracts are being returned first and all fourth-quarter applications which were received on time will be returned by October 15.

In the meantime, the provisions of Priorities Regulation 11 for an interim procedure have been modified by Amendment 4. As before, companies which have not yet received their fourth-quarter certificates may order up to 40 per cent of their estimated fourth-quarter requirements for delivery in October. Today's amendment provides, however, that they may not apply preference ratings before receiving their certificate to more than 70 per cent of their estimated fourth-quarter requirements, and they may not apply ratings under the interim procedure to a greater volume of material than they actually put into production in the first 2 months of the third quarter—namely, during July and August of 1942.

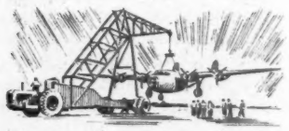
Used or Salvaged Steel Exempt From Order M-21

WASHINGTON, D. C.—"Steel" and "iron products" as used in Order M-21 do not include used or salvaged materials, the director general for operations announced September 2 with the issuance of Interpretation 1 of the order.

This interpretation is issued to clear up questions in many industries as to the position of used and salvaged material under M-21, the order which restricts distribution of iron and steel.

"Hey, Joe! Spool that new line right the FIRST time...

"YOUR UNCLE SAM'S AIR CORPS uses a lot of wire rope, Joe. Uses it right, too, because wire rope's got a lot of important jobs in this man's flying army: swinging half-ton eggs into bomb racks and towing planes out of hangars —big ropes for the cranes that "walk away" with damaged craft and fine cables for control in the air . . ."



Let's look at it this way: wire ropes, like people, pick up habits quick and easy, lose 'em hard. A wire rope's habits, in the Air Corps or on a drilling rig, begin when it's first spooled off the reel—and *bad* habits in a drilling line mean shorter rope life, sloppy service. When you spool a new line onto the drum, observe the following rules:

Wind the rope with *special care* the first time you do it. A little extra time spent on the first wind will pay big dividends. *Guide the first layer carefully into place.* With a smooth-faced drum, this means to make each turn fit snug against its neighbor *without* interlocking of strands. For best results, the dead wraps must be wound tight against the drum face.

Be sure there's a brake on the reel. This provides uniform winding tension which produces necessary snugness and prevents rope damage due to over travel of reel. Mount the reel as shown in illustration so the rope pulls off the underside. Be sure the rope lead from reel to drum is straight and unobstructed.

By following these simple rules in spooling new line, you'll be helping

that line to work better and longer. With Roebling "Blue Center" Steel Wire Rope, that means getting all the *extra* value built in by Roebling's 100 years of wire-rope engineering, means keeping that wire rope on the job for Victory.

JOHN A. ROEBLING'S SONS COMPANY
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Branches and Warehouses in Principal Cities

Distributed by
THE NATIONAL SUPPLY CO.

★ PROMPT SERVICE
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STEEL WIRE ROPE
PREFORMED OR NON-PREFORMED

Tank Cars Placed Under More Restrictive Priority Order

WASHINGTON, D. C.—Increasingly rigid control over movements of railroad tank cars is imposed by developments of the past week.

The Office of Petroleum Coordinator was completing final details for formal issuance of its Directive 59 requiring trainload movements and pooling of products in District 1, but the general outlines of this had already been revealed and were referred to in other official announcements.

Among the developments were:

1. Final report of the Maloney committee, which commended the strides already made as well as the OPC directive, as yet unissued, calling for pooling of products and transportation facilities.

2. The directive mentioned above will propose the "solid-train one-terminal" plan of shipping petroleum and products.

3. The War Production Board's order establishing priorities for tank-car use, in which carriage of petroleum and products was placed in category "C," except for those destined for Army or Navy use.

4. The Office of Defense Transportation's declaration that the WPB's order provided a "mandate" under which the ODT must operate in allocating tank cars.

Shippers, Rails Commended

The Maloney committee report concludes that the government agencies, railroads, tank-car companies and shippers involved have done such a good job that there is no longer any need for its (the committee's) study.

"The committee," the report says, "contemplates no further formal activity unless new problems arise in connection with the petroleum and solid-fuel needs of the civilian and military consumers of the United States.

While comparable figures for the present time are not available, the committee report reveals that in September 1941 more than half the tank cars in daily service were traveling about 50 miles a day, and that the per-day mileage was from 10 to 250, although there were more than three times as many cars traveling 10 miles per day or less than were traveling 200 to 250 miles.

These figures were based on returns to questionnaires, and were turned over to government agencies charged with oil movement. The answers also showed that the bulk of "loaded hauls" in tank cars was from 300 to 500 miles, although the range was from 1 to 1,000 miles. The returns showed that there was an average of three cars hauling from 851 to 900 miles; 68 from 901 to 1,000, and 1,559 making hauls of more than 1,000 miles. There were (and these figures are still for September last year) about 365 cars making average hauls from 1 to 50 miles; 597 from 50 to 100, and 693 from 100 to 150 miles.

All this has been changed now, the committee reports, with the encouragement of trainload movements, ban on short tank-car hauls, and other government actions, and as of the latest report, 856,710 bbl. of petroleum products moved into the East Coast by tank car during the week ended September 19, much of it in trainload lots. Undoubtedly the average haul under present conditions is well over 500 miles.

While the directive of OPC on trainload movements and products pooling is still being awaited, it is understood that one of its primary provisions is the "solid-train to one-terminal" plan. The Maloney report comments on this plan, which was originally proposed by the Office of Defense Transportation, as follows:

"The committee endorses the suggestion of the Office of Defense Transportation that the consolidation of shipments by means of cooperative receiving agencies is one worthy of consideration by the oil companies. Several central points within each consuming center of the East would be used as terminals for solid trains of petroleum, which would be moved from the refineries, unloaded at the terminals and started back within 24 hours. The oil then would be distributed by tank trucks, barges, pipe lines, and local carriers. This is known as the 'solid-train to one-terminal' plan. This program would eliminate much of the unnecessary switching and reclassification in railroad yards, thereby increasing the speed of the movement of loaded and unloaded tank cars. With adequate motive power and favorable weather conditions, it is possible that the solid-train plan may enable the companies to reach the 1,000,000-bbl. per day figure with the 750,000 tank cars, according to some students of the problem."

The committee report may be a little optimistic, some observers here think, in view of the War Production Board's schedule, issued late last week, relegating civilian shipments of petroleum and products to category "C," while *all* shipments of any products to the military get "A" precedence, and a group of chemicals, fats and oils get second precedence.

Nevertheless, the large tank-car movement of petroleum products enters into the order, which says:

"The problem, however, of procuring 2,000 additional cars to handle the fall peak traffic remains. With approximately 6,000 tank cars reported in service transporting such war essentials as cottonseed, linseed and peanut oils, lard, tallow and grease, ODT officials estimated that 8,000 would be required for the fall peak.

Normally these cars would be available to meet the seasonal demand. Several thousand of them, however, have been "loaned" for the movement of petroleum and petroleum products from the producing fields of the Middle West into the eastern-seaboard area. Approximately 85 per cent of the nation's 143,000 tank cars are transporting petroleum, some 70,000 of them moving oil to the eastern district. The other tank cars are transporting vegetable fats and oils, chemicals and miscellaneous items, which—despite their relatively small volume—are vital to the war effort."

The new priorities schedule of tank-car uses is designed to distribute the nation's 143,000 cars on a basis of "first needs first," ODT officials declare.

With the bulk of the country's tank cars transporting the petroleum which formerly moved in oil tankers, the need for cars to transport war-essential chemicals and vegetable fats and oils has become critical. Recognizing this situation, WPB has ordered ODT to give these latter items preferential treatment in the allocation of cars.

Petroleum in "C" Bracket

Certification of Necessity for Priority Action 1 issued by WPB under its authority to prescribe to ODT the commodities to which transportation precedence shall be given, set up five classes of materials and commodities transported in tank cars and directed the ODT to execute priorities in the following order:

Class A.—Transportation of materials consigned to or for the Army and Navy, the Maritime Commission, the War Shipping Administration, or Lend-Lease.

Class B.—Transportation of certain chemicals, edible and nonedible fats and oils, and other foods and commodities.

Class C.—Transportation of petroleum and petroleum products into the eastern district in quantities certified by the OPC subject to review by the director general for operations of WPB.

Class D.—Transportation of petroleum and petroleum products, other than automotive gasoline, within the eastern district and into or within the other four districts of the country in quantities certified by OPC.

Class E.—Transportation of automotive gasoline within the eastern district and into or within the other districts as certified by OPC, subject to review by the director general for operations of WPB.

ILLINOIS BASIN CHAPTER OF A.P.I. ELECTS . . .

Officers and members of the executive committee elected at the September meeting of the Illinois Basin chapter, American Petroleum Institute which was held in Mount Vernon, Ill. Seated are: John Sanford, Rock Hill Oil Co.; and C. J. Haas, Adams Oil & Gas Co., the retiring chairman. Standing: T. B. Steele, Kewanee Oil Co.; Alfred H. Bell, state Geological Survey; R. B. Kelley, Pure Oil Co.; C. C. Carroll, Ohio Oil Co.; Frank Wilson, Sohio Pipe Line Co.; A. F. Keating, first vice chairman, Robey-Keating Drilling Co.; A. F. Sackett, Fisher Oil Co.; Will I. Lewis, W. I. Lewis, Inc.; Ralph K. Damp, Carter Oil Co., and E. J. Reading, Sun Oil Co., the new chairman of the chapter

Suppliers in Three Districts Directed to Pool Products

WASHINGTON, D. C.—The Office of Petroleum Coordinator issued its Directive 59, September 29, requiring pooling of products and transportation facilities by all companies refining and marketing in District 1.

Terms of the directive have been generally known to the industry for the past 2 weeks and many parts of it are actually in operation already. The plan cannot go into full legal and actual effect until November as shipping schedules for the month must be worked out in detail by industry committees and approved by the OPC chief counsel.

The plan admittedly eliminates competition and duplication in order to get more efficient use of transportation facilities, particularly tank cars, and to obtain more equitable distribution of oil to meet minimum-ration demands and production of war materials.

Plan applies to all shipments of crude and the four principal products: Gasoline, kerosene, distillate and residual fuel oils shipped into District 1. OPC will set minimum specifications for the four products and these must be accepted by all shippers but nothing in the directive prevents continued use of individual brand names.

The OPC director of supply will furnish monthly forecasts for Districts 1, 2 and 3 showing suppliers quantities of crude required for refining in each district, products to be made and specific interdistrict movements. OPC district committees by the twentieth of each month will draw schedules of shipments for each shipper in Districts 2 and 3 and arrange for sale and exchange of products and common use of facilities. The District 1 committee will prepare schedules for each primary supplier meaning refiner or importer into the district, showing his receipts for the coming month, source of supply, and terminal to be used. Preference must be given to pipe-line, barge and tanker deliveries, and tank cars may be used only in trainload lots and between designated loading points and terminals. Distributors must accept delivery at these terminals but may move products to his own bulk plants unless OPC finds this results in inefficient transportation.

For purposes of this directive, District 1 is divided in six zones: Zone 1, six New England states; Zone 2, eastern New York, including Cayuga, Tompkins and Chemung counties, eastern Pennsylvania, including Bradford, Sullivan, Columbia, Monitour, Northumberland, Dauphin and York counties, New Jersey and Delaware; Zone 3, Maryland, Virginia and District of Columbia; Zone 4, North and South Carolina; Zone 5, Georgia and Florida; Zone 6, western New York, Pennsylvania and West Virginia.

Supply schedules will be arranged to cover minimum-ration demand in each zone and build up storage. Shipments may not be made out of any zone unless there is a local excess of supply. Suppliers must purchase in amounts and from sources designated with allocations based on proration of 1941 business in that zone. Purchases by importers and sales and exchanges between suppliers in District 1 will be by private negotiation within OPA price-ceiling limitations and disputes on terms will be referred to OPC director of supplies. Where compliance with schedules works unreasonable hardship appeals may be taken to OPC district director and from him to petroleum coordinator.

One-Third Reduction in Fuel For Heating Is Aim of OPC

WASHINGTON, D. C.—Consumption of fuel oil for heating purposes in the 30 rationed states this winter will be 33⅓ per cent below normal, under rationing plans now being perfected by the Office of Price Administration.

This will be about 26 per cent below consumption last winter, which was abnormally mild. This percentage of curtailment, however, is tentative and subject to adjustment in accordance with weather conditions.

This cut of one-third is deeper than required by the most optimistic estimates of supply and transportation conditions, so there is a possibility that it may be modified somewhat as the winter progresses. OPA philosophy is to state the worst now so as to stimulate conversion to other fuel where possible.

Oil used for prime movers and processes by industries probably will not be curtailed. Heating oil for all buildings other than residences will be cut a flat 33⅓ per cent. Oil used for hot-water heating in private residences will be rationed on the basis of 15 gal. per month plus 5 gal. per month per member of the family, which is expected to work out as a curtailment of about one-third.

For household heating the OPA formula is quite complicated. Factors in this formula are: Past average consumption adjusted to normal and reduced 33⅓ per cent; degree-days in the community; square feet of heating space; heat-loss characteristics of the house; efficiency of the heating plant; and ability to convert to another fuel. The better insulated houses will get proportionately more oil than the "sieves" which lose heat. The extremely heat-tight house may be cut no more than 15 per cent; the better-than-normal by 15 to 33⅓ per cent; the average by 33⅓; and the "sieves" may be cut as much as 40 per cent.

The rationing will start around October 15 or 20, and different dates may be used for different areas, but it is expected that each householder's coupon book will be "tailored" to take account of oil in his tank. Each coupon will be good for 10 gal. of fuel oil, and dealers must turn them in when getting new supplies and must also account for their own inventories. Large industrial users will not have to use coupons, but will be under an audit control to insure the required curtailment.

New Record Set in Eastern Oil Movement by Railroad

WASHINGTON, D. C.—Tank-car shipments of oil into the East Coast shattered all previous records for the second consecutive week with an average of 856,710 bbl. daily for the week ended September 19.

This was an increase of 18,270 bbl. over the daily volume moved during the preceding week, when car loadings reached the then all-time record of 838,820 bbl. daily.

In shipping the unprecedented total of 856,710 bbl. daily to the Atlantic seaboard, 37 companies loaded 28,557 cars. On the basis of an average of 210 bbl. per car, these cars carried the equivalent of 5,996,970 bbl. of petroleum and products during the week.

Seth W. Herndon Made Director Of Natural Gas and Natural Gasoline Division, District 2

Seth W. Herndon, president of the Herndon Drilling Co., Tulsa, has accepted appointment as District 2 director of natural gas and natural gasoline, a post in the organization of the Office of Petroleum Coordinator to which he was assigned by Ralph K. Davies, deputy coordinator.

Mr. Herndon's headquarters will be at the District 2 office, Suite 1336, 120 South La Salle St., Chicago.

Experienced in production of oil, natural gas, and natural gasoline, the new district director has been actively engaged as an independent oil man since 1921.

SETH W. HERNDON

Mr. Herndon received his early education in Plattsburg, Mo., and then majored in mathematics at the University of Missouri. During this period and immediately after leaving the university, he worked as a driller and tool dresser.

In 1921 he became general superintendent of the Bu-Vi-Bar Petroleum Corp., of Tulsa. In 1925 he left that company to form his own organization, the Herndon Drilling Co.

The new district director will have charge of all natural-gas and natural-gasoline work for OPC in the following 13 states in District 2: Michigan, Tennessee, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas, and Oklahoma.

Coes Heads A.S.M.E.

NEW YORK.—Harold V. Coes, vice president of Ford, Bacon & Davis, Inc., New York, was elected president of the American Society of Mechanical Engineers for 1943, according to announcement of C. E. Davis, secretary of the society.

New officers will be installed during the eighty-third annual meeting of the society to be held in New York, N. Y., at the Hotel Astor, November 30-December 4, 1942.

U. O. P. isomerization process multiplies isobutane supply

That means increasing production of 100-octane gasoline for Uncle Sam's fighting flyers

In producing 100-octane gasoline, one important step is alkylation That means combining olefin molecules with isoparaffin molecules catalytically to make a product called alkylate, that is more valuable than either

Isobutane is the paraffin that combines readily with the olefins, and the supply of natural isobutane is strictly limited

There is plenty of normal butane in natural gas, in refinery gases, in gases from storage tanks—but more isobutane is needed

That's where the U.O.P. catalytic isomerization process comes in It converts normal butane into isobutane, economically and efficiently

The process is described in U. S. Patents 2,283,142 and 2,283,143 which issued to Universal on May 12, 1942

It is available to every refiner who can use it—under license from Universal

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

THE REFINERS INSTITUTE OF PETROLEUM TECHNOLOGY

Texas Mid-Continent Association Completes Annual Meeting Plans

DALLAS, Tex.—Final convention plans for the Dallas meeting of the Texas Mid-Continent Oil and Gas Association have just been announced by George Sawtelle, of Houston, Tex., president.

In keeping with war conditions, the business sessions of the convention this year are being confined to one full day, Friday, October 9. However, many of the oil men have planned to stay over in Dallas to attend the Texas-Oklahoma football game at the Cotton Bowl on October 10.

Principal speakers on the program October 9 are Robert E. Wilson, chairman of the economics committee, Petroleum Industry War Council and president of the Pan American Petroleum & Transport Co., New York. Dr. Wilson will speak on the subject of transportation and supply in Districts 1, 2 and 3.

The effect of selective service upon the Texas oil industry will be discussed by Lt. Col. Darnce B. Burns, chief of the Manpower Division, U. S. Selective Service, Austin, Tex. Donald B. Knowlton, director of production for the Office of Petroleum Coordinator, Washington, and D. E. Buchanan, regional director of District 3 for the OPC, with headquarters at Houston, will discuss drilling and production practice and the place of the oil industry in the war effort. All three of these speakers will allot time for answering questions from the floor.

Maj. Gen. Richard Donovan, commanding the Eighth Service Command, Fort Sam Houston, will outline the functions of the command and the cooperative efforts of the Texas oil industry in defense activities.

George Sawtelle, president of Kirby Petroleum Co., will present his annual report, combining the highlights of work done by various association committees during the past year and problems now confronting the industry.

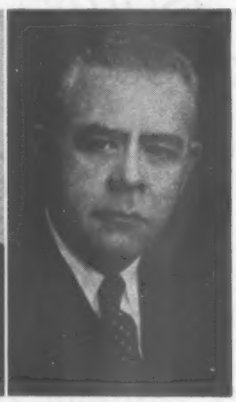
Entertainment plans are now being worked out by the Dallas wildcat committee, under the chairmanship of W. D. McBee, which will include a reception and buffet supper at the Dallas Petroleum Club Friday evening and golf privileges and a buffet luncheon at the Brook Hollow Country Club on Saturday morning.

A highlight of the meeting again this year will be presentation of distinguished service awards to several Texas oil men. Names of the recipients of these annual awards are not disclosed until the presentation ceremony.

GEORGE SAWTELLE

D. R. KNOWLTON

D. E. BUCHANAN



GEORGE C. GIBBONS

GEN. RICHARD DONOVAN

LT.-COL. D. B. BURNS

W. D. McBEE

EUGENE McELVANEY

Operators Warned to Use Preference Ratings Only When Assistance Necessary

WASHINGTON, D. C. — Oil operators were warned this week that Preference Order P-98-B prohibits use of the A-1-a rating if the desired materials can be obtained on A-2. Furthermone, the Office of Petroleum Coordinator pointed out in a clarifying statement, the order prohibits the use of any preference rating, provided the necessary operating supplies can be obtained without use of priority assistance.

Both A-1-a and A-2 ratings may be used for deliveries of all materials for production purposes but only for maintenance, repair and operating supplies in other branches of the industry.

Petroleum Suppliers Forced To Give Purchase Options Before Dismantling Stations

WASHINGTON, D. C.—Suppliers Monday were prohibited from removing pumps and storage tanks from service stations without first giving both property owners and station operators the option of purchasing them. The procedure was established September 28 by amendment to OPC Recommendation 30.

The operator gets first option, of 30 to 45 days, and if he does not elect to purchase, then the site owner gets a 15-day option. Sales must be made at reasonable prices. The amendment was issued because many stations are being closed owing to the manpower shortage. Once retail-outlet equipment is removed it cannot be reinstalled because of limitation in Conservation Order M-68-C.

Quantity Production of Tires From Reclaim Ready to Start

Several of the large tire manufacturers this week were completing arrangements for the manufacture of war casings which will require only 4 oz. of virgin raw rubber. Remainder of the tire will be made from reclaimed rubber. This aid to solution of the automobile-tire problem, first proposed by members of the Petroleum Industry War Council's subcommittee on rubber supply, was endorsed by the Baruch committee and now is presumably a definite phase in the national policy.

The new war tire, rubber-tire companies assert will give 10,000 miles of service if driven at speeds of 35 m.p.h. and less.

In the expectation that government regulations in line with the Baruch committee report will shortly release sufficient quantities of reclaim to keep essential wheels rolling, the tire companies have revamped their manufacturing equipment to start quantity production on short notice.

The new war tire, rubber-company spokesmen said, lends itself to recapping when the original tread becomes worn. Quantity deliveries to dealers throughout the country can be made by the time final details of the Government's tire-gas rationing plan are completed and placed in effect, it was declared last week at Akron, Ohio.

Longhorn Sells Properties in Southern Illinois Areas

EVANSVILLE, Ind.—Case, Pomeroy & Co., Bradford, Pa., and Felmont Corp., New York, and Dallas, Tex., have acquired the entire stock and properties of the Longhorn Oil Corp., of this city. Properties, located in southern Illinois, include approximately 7,000 acres of leases and 50 oil wells with a daily production of 2,000 bbl. They were valued at approximately $1,700,000. Case, Pomeroy & Co. acquired three-quarters, and Felmont Corp. one-quarter of the Longhorn company.

OPC Refining Division Is Clearing House for Petroleum

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nical consultant with the old National Defense Advisory Commission and later with the Office of Production Management. The other assistant director is R. B. Cragin, formerly with M. W. Kellogg Co., and who also doubles in brass as chief of the supply section. Most of the administrative details and routine personnel matters are handled by the administrative assistant, E. J. (Ernie) Green, a government career man formerly with the Department of Justice. The attorney assigned to the division is John Leonard, formerly with Universal Oil Products Co.

The operations section of the Refining Division is headed by D. P. (Doug) Bailey, formerly with several large oil companies and until the war director of a refinery in France. This section has the continuing job of seeing that the right materials get to the right refineries in order to meet the schedules for production of petroleum war products. It apportions production among refineries, directs the flow of crude, allocates TEL, instructs certain refineries to make more or this and less of that product, assists in the production of less motor gasoline and more fuel oil and war products, and in other ways supervises and directs the operations of the refining industry of the country as though it were all one big company.

Process Development Section

The process development section corresponds roughly to the research division of a refining company. It looks over new patents and processes for ideas which can be applied to the war program, works out crossexchange agreements and patent licenses, and assists the Patent Office in administering secrecy injunctions on new patent applications in the refining field and in releasing these secrecy injunctions as to parties who can use the new processes. It is headed by Dr. M. R. Mandlebaum, formerly a private consultant and more recently with Gray Processes Corp.

The largest group in the Refining Division is the supply section. Its duties are to correlate forecasts of production of petroleum war products with estimates of demands for military, export, and essential war industry uses. This is essentially a "bookkeeping" operation, but it also involves inducing users to keep their anticipations down to possible delivery schedules on the one hand and foreseeing and correcting future shortages on the other hand.

The new facilities section, headed by George L. Parkhurst, formerly with Standard Oil Co. (Indiana) negotiates contracts for the production and sale of aviation gasoline and other war products. These contracts, of course, are actually entered by other government agencies, but this section writes them up complete to the dotted lines for signatures. It also passes on the technical soundness of proposals to make synthetic-rubber ingredients and other products, and makes contract recommendations to other agencies.

After a contract has been signed and a refinery needs equipment for construction or conversion, the construction section has the job of getting the necessary priorities and allocations. This dovetails but does not duplicate the Materials Division of the OPC, since the construction section is concerned only with new projects and not with maintenance and repair materials. An important part of the work of this section is finding ways of building refineries with less critical materials than the applicants think necessary, or locating used equipment which can be moved and converted. The chief of this section is Max B. Miller, formerly head of his own company, Max B. Miller Co.

Not assigned to any section but constantly available to all are two experienced technical consultants, D. W. (Dusty) Wilson, formerly in consulting practice, and E. B. McConnell, formerly with Standard Oil Co. of Ohio. Currently these men are devoting most of their time to assisting refiners in adopting new processes and equipment for the production of butadiene and accompanying products and codimer, diisobutylene, and ethyl benzene.

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Standard of Indiana Will Use Glass Bottles, Save Tin

CHICAGO. — Substitution of glass bottles for tin cans in packaging certain petroleum specialty products and lubricants, which will divert to the current nation-wide tin-conservation drive 255 tons of tin plate a year for the war effort, was announced last week by Standard Oil Co. of Indiana.

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DEATHS

JESSE K. HUGHES, 78, president of J. K. Hughes Oil Co., and pioneer oil operator in the East Central Texas area, died at his home in Mexia, Tex., September 27. He was a former director of the Independent Petroleum Association of America.

LEICESTER CROWELL COLLINS, 62, president of Westland Oil Co., died at his home in Tulsa last week following a 3-month illness. He had been a resident of Tulsa since 1920. He was born at Brooklyn, N. Y., where he received his elementary school and college education, following which he attended Yale University. He is survived by his widow, a stepson, a brother and a sister.

WILLIAM PARKER WHITE, member of the sales department and an employe of the Texas Co., Houston, Tex., since 1911, died in a Houston hospital last week. He was a member of the Old-Timers Club and was scheduled for retirement in December. A native of Savannah, Ga., he had been a resident of Houston since 1907. He is survived by his widow, a son, three sisters and a brother.

WESLEY OPEL KING, 46, secretary-treasurer, Elko Oil & Gas Co., died at his home in Tulsa last week. He is survived by his widow, his parents and three sisters. He had been ill about 6 months.

LEE C. MOORE, 89, founder of Lee C. Moore Co., inventor of oil-field tools and widely known among equipment men and oil operators, died at his home in Tulsa September 24. He had been a resident of Tulsa since 1922. He was born in Mesopotamia, Ohio, and spent his early boyhood on a farm. He went to work for Trenton Iron Co., Trenton, N. J., his first regular job, when 16 years old. With this company he displayed his inventive genius by designing a number of special tools. He later went with Cooper-Hewitt Co., with which he was associated until he was 65 years old, holding various responsible positions. He then built a wire rope shop for Waterbury Rope Co., Brooklyn, N. Y., and later was called to Pittsburgh, Pa., by Frick & Lindsay Co. to promote sales of wire rope for drilling purposes. He was a pioneer in the development of steel derricks and designed the first steel pipe derrick. He also took out a number of additional patents on tubular steel structures. He moved to Tulsa with the Lee C. Moore Co. but later sold the business, which still retains his name. He is survived by his widow and a daughter.

Neglect of Oil Finding Places Future Reserves in Jeopardy

(Continued from Page 18)

the final stage of rubber making were primarily in the hands of four major rubber companies, one other oil company, and a chemical company.

"Phillips Petroleum Co., however, was asked to build and operate butadiene and styrene plants for the Government. A rubber company was awarded contracts to build and operate the final-stage rubber plant being built at the same location. More than 6 months work has already been done on the design and construction of these plants; more than a thousand men are working day and night to speed up construction in a frantic attempt to provide an adequate supply of rubber before disaster overtakes us.

Six Months of "Stop and Go"

"After 6 months of confusion and 'stop-and-go' instructions by the government rubber experts, the president appointed the Baruch committee to investigate and unsnarl the rubber situation. The committee severely criticized the management of the Government's rubber program, especially its failure to investigate the Russian processes for making rubber, and recommended sweeping changes in authority and procedure. It asked for expanded output, including the erection of a 27,000-ton plant to manufacture butadiene from grain and a rubber plant to convert this production into 30,000 tons of buna-S rubber per year. The committee also recommended the construction of plants to manufacture 100 million gallons of alcohol a year, to be located in the Midwest near the source of grain supply. Why shouldn't Iowa be the logical location for these plants? I am sure you are already on the job.

"There has been some conflict in opinion as to the proper source of supply for our synthetic rubber. Rubber can be made from a variety of raw materials and by different chemical processes. I am in favor of making rubber out of anything, or by any feasible process that will produce this nation's requirements of synthetic rubber in the shortest possible time. I believe that expresses the feeling of the entire oil industry. It would be selfish and short-sighted to take any other attitude. The oil business is dependent upon the automobile, which must have tires in order to use gasoline.

"Although rubber made from grain may be logical as a war measure, it is not likely to survive as a postwar industry because of higher cost. The oil industry can make butadiene from petroleum at a lower cost than it can be made by using alcohol. As a matter of fact, alcohol itself can be made more cheaply from petroleum than from grain.

"In testimony before the Gillette Senate subcommittee, figures were submitted, using data supplied by the U. S. Department of Agriculture, that showed the relative costs of making alcohol from grain and petroleum. According to this testimony, a gallon of alcohol from petroleum costs only 18 cents, whereas a gallon of alcohol from corn at 50 cents a bushel would cost about 30 cents and from wheat at $1.14 a bushel would cost about 53 cents."

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Continental Plans to Connect Sunray's Wilcox Discovery

Continental Pipe Line Co. is seeking authorization to lay a line to Sunray Oil Co.'s 1 Welch, new discovery well in the Wilcox sand, 7-1n-2w, in Oklahoma.

Natural Gas News

Conservation Measures Recommended for Three Gas Producing Fields in Pacific Coast Area

SPECIFIC recommendations of measures to conserve natural gas from the Coalinga Eocene, Wilmington and Santa Maria Valley pools have been made by the gas-conservation subcommittee to the District 5 production committee, Office of Petroleum Coordinator.

These recommendations include a request that the gas companies handle all possible Coalinga Eocene gas, even though it contains sulfur until a purification plant can be erected; that existing gasoline and compressor-plant capacity be increased; that operators produce at uniform rates to avoid fluctuations in gas production; that high-gas-ratio wells be shut in or the ratios controlled.

For Wilmington, the recommendations are that operators extend the gas-gathering systems to all wells possible; that gasoline and compressor-plant facilities be made adequate to handle present gas production and allow for increased production.

Santa Maria Valley recommendations are that an additional gasoline and compressor plant together with gathering and transmission facilities be erected; that refiners in the field use gas rather than oil as fuel; that gas ratios be controlled; that no gas from the Ventura area be introduced into the Santa Barbara-Santa Maria system, and that additional compressor capacity be provided to deliver Santa Maria gas to the Ventura line.

The study which led to these recommendations followed a directive from OPC that gas blow to the air could not be tolerated in California. This directive, contained in the letter of approval of the July allocation in schedule, said: " . . . it is again reiterated that the venting of natural gas to the atmosphere cannot be tolerated for any reason in view of prospective demand for such gas of war industries and essential civilian services during the forthcoming winter. Any oil allotment whatsoever is hereby expressly denied to any well if the production of the quota . . . would . . . cause the venting either directly or indirectly of any natural gas into the atmosphere."

Enforcement of this directive has been held in abeyance pending the study and recommendations of the gas-conservation subcommittee, as the production committee pointed out that literal interpretation of the order would result in wholesale shutdowns of producing wells particularly in the Santa Maria Valley and Wilmington fields, whose fuel-bearing crude oil is in high demand for military and war-industry use.

It is recognized, however, that conservation of gas is highly necessary in California, and it is the opinion of the production committee that immediate steps to put these recommendations into effect must be taken by producers, natural-gas purchasing companies, gasoline-plant operators, and others involved, if future production schedules are to be approved by the OPC.

It is also pointed out that the Government has an obligation in this regard, since it must make the necessary steel and equipment available to construct gasoline plants, gathering lines, and other recommended facilities. The committee report notes that present plant capacities were engineered to handle the volume of production prior to the war, and that the difficulty is in large part caused by the increased demand for oil, with its accompanying large production of natural gas, caused by the war.

Natural Gas Pipeline Co. and Texoma Make Rate Reduction

Natural Gas Pipeline Co. of America last week filed with the Federal Power Commission new schedules reducing wholesale rates on natural gas sold utilities in Illinois, Iowa, Kansas, and Nebraska by an additional $2,738,000 annually, retroactive to September 20.

The move came on the eve of a FPC hearing slated for September 25 in Chicago.

The reduction, plus those previously ordered and upheld by the Supreme Court, amounting to $3,770,000, will reduce charges to utilities in the four states by $6,500,000 a year. The pipe line filing brought to a close the commission's largest natural-gas rate-regulation effort.

On receipt of the new schedules the commission formally terminated its proceedings against Natural Gas and its affiliate, Texoma Natural Gas Co.

The order cancels further hearing and terminates proceedings against the company, subject to the provision that such cancellation and termination is without prejudice to any findings or orders which may be made by the commission in any proceeding now pending or hereafter instituted by or against the pipe-line company.

The commission emphasized that the rate reductions to wholesale customers must be passed on to retail consumers.

FPC said the new rates accepted, combined with reductions effected by the commission's earlier order will result in a reduction of approximately $5,751,000 in the rates paid Natural Gas Pipeline Co. by the Chicago District Pipe Line Co., which sells gas purchased from Natural Gas Pipeline.

Panhandle Eastern Ordered To Lower Rates $5,094,384

WASHINGTON, D. C.—The Federal Power Commission last week directed that the rates and charges of the Panhandle Eastern Pipe Line Co. and its affiliate, Illinois Natural Gas Co., both having main offices in Kansas City, Mo., for the transportation and sale of natural gas in interstate commerce for resale for ultimate public consumption be reduced not less than $5,094,384 on the basis of 1941 operations and revenues.

The Panhandle system constitutes the longest natural-gas pipe line in the world and serves more than 200 cities, towns, and communities with more than 700,000 retail customers in Texas, Kansas, Missouri, Illinois, Indiana, Michigan, and Ohio. The order directs the respondents to file, on or before October 15, 1942, new schedules of rates and charges to reflect the reduction and states that such new schedules shall be effective as to all bills regularly rendered on or after November 1, 1942.

The opinion, prepared by Commissioner John W. Scott, excludes evidence of reproduction cost of respondents' property from the proceeding.

For the sole purpose of disposing of the motions for an immediate order reducing rates, the commission found the companies' consolidated net investment in properties used and useful in the public service to be $66,217,305, which was established by determining $78,814,292 to be the actual legitimate cost of gas plant in service at December 31, 1941, and deducting therefrom $12,596,987 as accrued depreciation. To the consolidated net investment the commission added $920,000 allowed as working capital to fix a total of $67,137,305 as the proper rate base for the purpose of the proceedings.

The order states that "an annual rate of return of not more than 6½ per cent on the rate base of $67,137,305, or $4,363,925, is a fair and reasonable return to the respondents" and says that respondents' gross operating revenues in 1941 totaled $17,789,573.

War Requirements on Natural-Gas Industry to Be Reviewed

War requirements on the natural-gas industry will be reviewed by the OPC district chairmen as one of the highlights of the annual meeting of the natural-gas division, American Gas Association at the La Salle Hotel, Chicago, October 5.

Application of War Production Board restrictive orders to the natural-gas industry will be discussed by a speaker from the WPB. E. Holley Poe, formerly secretary of the natural-gas section and now director of the natural-gasoline and natural-gas division, Office of Petroleum Coordinator will discuss work of his organization.

An outline of the program follows:

1. Observations by:

George S. Hawley, president, American Gas Association and president of Bridgeport Gas Light Co., Bridgeport, Conn.

Alexander Forward, managing director, American Gas Association.

A. F. Bridge, president-elect, American Gas Association and vice president and general manager, Southern Counties Gas Co., Los Angeles, Calif.

2. Symposium: War Requirements in the Natural-Gas Districts:

Leader: J. French Robinson, chairman OPC District 1; chairman natural-gas section, American Gas Association and president of the East Ohio Gas Co., Cleveland, Ohio.

Burt R. Bay, chairman OPC District 2; vice chairman, natural-gas section, American Gas Association and president of Northern Natural Gas Co., Omaha, Neb.

N. C. McGowen, chairman OPC District 3, and president of United Gas Pipe Line Co., Shreveport, La.

R. W. Hendee, chairman OPC District 4, and general manager of Colorado Interstate Gas Co., Colorado Springs, Colo.

William Moeller, Jr., chairman OPC District 5, and vice president, Southern California Gas Co., Los Angeles, Calif.

3. WPB Orders and Their Application to the Natural-Gas Industry:

(Speaker from the War Production Board).

4. OPC Orders and Their Application to the Natural-Gas Industry:

E. Holley Poe, director, natural-gas and natural-gasoline division, Office of Petroleum Coordinator, Washington, D. C.

5. Business meeting.

ENGINEERING *and Operating* SECTION

▼

Four-Year Operation Shows Merit of Rig Design

By HARRY F. SIMONS

Four years ago Patsy Oil Co. purchased what was then the most modern of steam rigs. While there have been advances in this type equipment since then they are mainly improvements on the basic design incorporated in the rig at that time. The rig has drilled 130,000 ft. of hole in southern Oklahoma and a review of its record shows the soundness of the design and the method of operation.

A REVIEW of the operation of a particular drilling rig over a considerable period of time brings out its more outstanding characteristics. It also shows to a certain extent the advances in drilling technique and the improvement in drilling-rig management during that period.

The Patsy Oil Co., of Ada, Okla., is an unusual organization and for Oklahoma its one rig is not the ordinary design used for Mid-Continent drilling. The rig is the modern steam-saving type. It has a single steam-generating unit with individual engines driving the mud pump, draw works and rotary table. Similar rigs are used elsewhere in the United States and in foreign countries.

In the operation of this particular rig, two of the drillers can do pretty much as they please because they are members of the firm. Claude and Ned Marcum, part owners of the company, each run a tour on the rig. H. W. Marcum, president of the company, looks after the business of the firm, and Clarence Marcum superintends the company's producing properties. Naturally, such an arrangement affects the manner in which the rig is run, how it is rigged up, its modernization and also permits the drillers to put into effect any ideas they may have on rig operation.

The Marcums were a far way from being novices in the drilling business when they purchased the new rig in 1938. H. W. Marcum started in the cable-tool drilling business in 1912 in Healdton and switched to rotary in 1922. The boys started in the rotary business in 1923 and ran their own rig until 1927 when they went to work for other drilling contractors. They resumed their drilling business in 1938 when they acquired the steam-saving rig to drill their own properties. With the exception of a well drilled for E. H. Moore in the Fitts pool, all the wells drilled since then have been for themselves.

During the 4 years, the rig has drilled 23 wells to depths from 3,700 ft. to 5,400 ft. for a total of 130,000 ft. This drilling has all been in South Central Oklahoma in the neighborhood of Ada. This is an area where the formations are as hard or harder than those normally encountered in Mid-Continent drilling.

Original Chains in Use

During the drilling of the 130,000 ft. of hole, the original chains on the rig have never been replaced. This is credited entirely to the use of an individually driven rotary table which relieves the draw-works chains of unnecessary wear and at the same time permits complete inspection and repair of the chains while drilling is in progress. The chains are inspected each tour and any missing cotter keys replaced. Worn pins are removed so that there is no play between the pins and the side bars. Lubrication with a light oil helps to prevent chain wear and trouble.

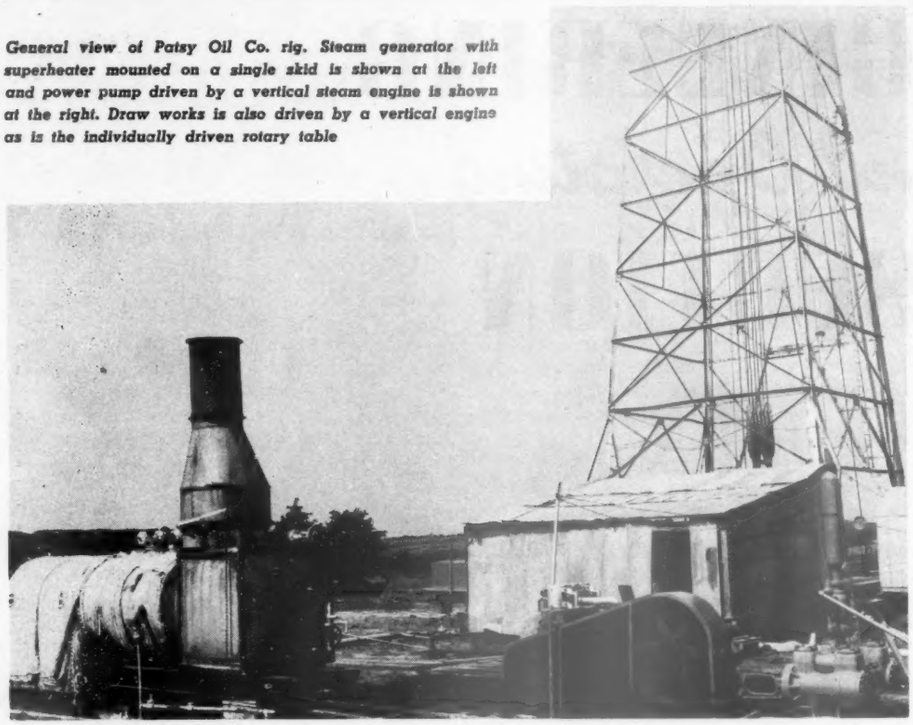
Drill pipe in use on the rig now is the string which was purchased with the rig and it has been used to drill every foot of hole. Only one twistoff has been experienced with the pipe and that was 2 years ago. It is still in good shape and will be continued in service. The pipe is 5⅛ in. in diameter, not an ordinary size for Mid-Continent drilling, but it is preferred by the Marcums because of its extra weight.

While the drilling of over 130,000 ft. in the Mid-Continent with a single string of pipe is probably not a record, it is unusually good footage and it can probably be credited mainly to the management of the drill string. The pipe is not "babied" and is subjected to as much speed and weight as the average string (75 to 150 r.p.m. and 10 to 20 tons). However, it is always broken on a different joint each trip and the joint threads and faces are watched for any defects. The wear on the pipe is evenly distributed as the position of the joints in the string are changed on each well, i.e. the bottom joints on one well become the top joints in the string on the next well.

Two drill collars are used on the bottom of the string, one is 40 ft. 8¼ in. and the other is 20 ft. of the same diameter. The drill-collar joints are likewise broken each trip to prevent thread failures. A 9-in. hole is drilled with the rig and 7-in. casing run in all the wells.

The drilling line on the rig has been replaced on two different occasions but the line in use at present has considerable remaining service. Roughly, this amounts to about 50,000 ft. of hole per line. The long life of the lines is credited to the use of a grooved drum plus a well-designed wire-line guide to prevent any whipping. The line is watched to see that it is spooling properly and the hoist is run at a moderate speed.

Another unusual accomplishment is the operation of the rig for 4 years without a lost-time accident to a member of the crew. This is credited to a combination of rig and guard design, close personal supervision by the drillers, low labor turnover, and care in rigging up. This latter is



General view of Patsy Oil Co. rig. Steam generator with superheater mounted on a single skid is shown at the left and power pump driven by a vertical steam engine is shown at the right. Draw works is also driven by a vertical engine as is the individually driven rotary table

believed by the Marcums to be particularly important and they do not fire up the steam generator until everything is ready to go. All lifting of equipment during the rigging-up period is with an tractor-mounted pulling unit belonging to the company. The rig is designed for quick and easy rigging up with a particularly large number of unions being used on the steam lines. This not only saves time but eliminates much of the physical exertion needed in connecting threaded couplings.

Time required to drill the well also has been reduced. In the Fitts pool, wells to approximately 4,000 ft. were drilled in 12 to 13 days' drilling time. In the Byars field, the drilling time has average 6 days to depths of 3,600 to 3,700 ft. The number of bits required also is less than normal with about 17 used at Fitts and 12 at Byars.

A contributing factor to the reduced drilling time is the familiarity of the drillers with conditions in the area. Mud is kept as thin as possible until just before a trouble zone is reached and then the necessary admixtures are used to bring the mud to the point where it will prevent trouble. There have been no stuck-pipe fishing jobs during the 4 years of operation. Unusually small pits (about 8 by 80 ft.) are used with the rig but the equipment includes a vibrating screen which eliminates much of the settling time normally required for the cuttings to drop out of the mud stream.

As a precaution against troubles in the mud-circulating system the mud pump is inspected and any repairs made before starting each well. Only one mud pump is used on the rig but because of the medium depth of the wells a hole can be drilled without any major repairs being necessary. The liners in the pump have been replaced three times or at an average of about 40,000 ft. of hole per set. Particular attention is paid to the piston rubbers and whenever there is any indication of leakage, they are replaced.

A steam rig, such as the Patsy Oil Co. operates, generally uses gas for fuel but it has not been always possible to obtain it in localities where the rig was engaged. For this reason, 11 of the wells were drilled using butane for fuel. The average fuel consumption while drilling was 110 gal. of butane per hour and the average fuel bill per well ran approximately $1,100. On other occasions the available natural gas was insufficient and butane was used as a supplement.

When using butane particular attention is paid to insure complete vaporization before it enters the fire box. This is accomplished with an 8-in. heater equipped with 1-in. coils. Exhaust steam is used for heat. The burner in the steam generator is under the stack end of the fire box. A duck's nest is used to prevent any concentration of heat against the fire-box walls. A blower is used in conjunction with the marine stack to obtain the necessary draft.

Water consumption on the rig averages 12 to 14 bbl. per hour, the low rate being obtained by as complete vaporization as possible and the use of exhaust steam for preheating the water before it enters the boiler. The exhaust from the engines carries practically no vapor with it.

The boiler feed water first passes through a tubular heater into which the pump engine exhausts and then goes through the special preheating pump where it is mixed with the exhaust coming from the draw-works engine or the rotary-drive engine. Before being admitted to the boiler the water has a temperature of 220° F. and would boil except for the fact it is under pressure. Such an arrangement saves both water and fuel.

Steam is delivered by the generator at a pressure of 350 lb. and at a temperature of 650° to 700° F. Such steam is much more efficient, develops much more horsepower and shows less heat loss in the line and condensation in the engines than wet steam.

One of the problems introduced by the use of steam superheated to such a high degree is that of lubrication. Use of a steam-cylinder lubricating oil designed for such heats solves part of the problem and in addition adequate lubrication is insured by the use of a hydraulic-head, sight-feed type lubricator. A positive displacement type lubricator is installed on each line. Care is taken to see that both lubricators are working at all times but if one should be out of service temporarily, no damage to the steam chests of the engines would result.

This type of rig is familiar to those engaged in drilling and no detailed description will be attempted. The basic difference in design of this rig from the usual steam rig is in the use of a steam generator which includes a boiler and superheater in a single unit, a preheating pump which mixes exhaust steam with the boiler feed water, vertical steam engines with a variable cut off for driving all equipment, and the use of independently driven rotary table. Each of these items plays an important role in the over-all efficiency of the rig.

Oil Removed From Exhaust Steam to Improve Boiler Operation

FOR more than a year after a new steam power plant was built in a refinery no difficulty was experienced in the general operation of the new boilers. Then, because of further expansion of the plant load another unit was added and the entire boiler plant made to operate at its full rated capacity. This stepping up of power output was followed by a tendency of the lower row of boiler tubes in all units to overheat and blister. Tubes had to be replaced at a rate of about two a month.

Careful reasoning suggested the trouble was due to oil contaminating the feed water.

In order to confirm the presence of oil in the boiler feed, samples of the soft scale deposits in the feed pump and from the suction line were taken. These were leeched with ether and it was definitely established that a large quantity of "steam cylinder oil" was present.

A filter then was designed and built by the "water engineer," of an inexpensive type which would scrub the oil from the exhaust steam.

Four months have passed since the installation of the oil filters and as yet no tubes have been blistered. So, by the simple removal of the oil eight tubes have been saved, based upon earlier experience.

The *OXIDATION* of Aliphatic Hydrocarbons (Part 2)

By GUSTAV EGLOFF, D. V. NORDMAN, and P. M. VAN ARSDELL
Universal Oil Products Co., Chicago, Ill.

Starting Aug. 20 the series has discussed the halogenation of aliphatic hydrocarbons and this is the second part in which their oxidation is discussed. This will be followed by several parts in which their nitration will be reviewed.

B. Catalytic Oxidation of Alkanes

Alkane oxidation may be catalyzed by nitrogen oxides, metals, and metal oxides.[20 48] The pronounced effect of the peroxide is probably related to the ease with which nitrogen valence may be changed,[20] although initial combination of the hydrocarbon and nitrogen peroxide may occur.[51 52] In the case of methane, this unstable complex would decompose to formaldehyde and a nitrogen oxide. Preheating the reactants before addition of the nitrogen peroxide may result in the direct formation of formaldehyde. There is also the possibility of chain initiation by oxygen atoms formed from the nitrogen oxides.[53] The chains may be broken either by contact with the surface or by deactivation of the oxygen atom through collision with inactive molecules. Methyl nitrite has been used as a promoter in the oxidation of methane and ethane.[54] Some metallic catalysts promoted alkane oxidation to such an extent that the state of equilibrium was reached almost instantly. Reaction rate of 1 to 5 per cent methane in air mixtures with a platinum-wire catalyst increased with temperature after the reaction began.[55] When methane was in excess, however, higher temperatures suppressed oxidation. The efficiency of platinum decreased when oxygen was in great excess due, perhaps, to partial deactivation resulting from the adsorption of oxygen on the surface of the catalyst. Silver and copper initiated methane-oxygen reactions at a lower temperature than platinum, but did not increase the rate to the same extent.[56] Rhenium has been used as a catalyst, but at high temperatures forms volatile oxides to such an extent that its use is unsatisfactory.[57] Vanadium oxide on pumice catalyzed the reaction between methane and oxygen and was almost as effective as platinum.[58] Heptane oxidation, using manganese vanadate, yielded some unsaturated compounds and a small percentage of acids, as well as oxides of carbon and water.[59] The alkanes, methane to butane, have been oxidized over platinized silica gel.[60 61] Methane has also been completely oxidized in the presence of silica gel with silver, copper, or palladium.[62] Palladium was most effective and silver became inactive in a short time.

Table 3 shows the types of reactions discussed in the section on Catalytic Oxidation of Alkanes, the use of oxidants other than oxygen gas are also shown in this table.

C. Use of Oxidants Other Than Oxygen Gas

Metallic oxides, in the presence or absence of catalysts, have been used for the complete oxidation of methane. With cupric oxide, the rate of oxidation which decreased as the reaction proceeded, was a function of the methane concentration.[63] Hydrogen and ethene as diluents lowered the initial reaction temperature and the temperature at which oxidation was complete,[64] due, possibly, to the liberation of heat when the gases more readily oxidized than methane begin to react. Lead chromate and oxides of iron, tin, zinc, and cobalt were less effective than copper oxide.[64 65] Ethane reaction with selenium oxide was slow and resulted in incomplete oxidation to glyoxal, acetic acid, and carbon dioxide.[66]

Ozone oxidation of methane was first attempted about 1873 when Houzeau and Renard[67] reported negative results at ordinary temperatures; however, when mixed with oxygen and in the presence of silent electrical discharge,[68] formaldehyde and formic acid were formed. Other workers[69 70 71] have succeeded oxidizing methane by means of ozone to carbon dioxide, formic acid, acetic acid, formaldehyde, and traces of methyl alcohol. Oxidation of methane with cupric oxide has been carried out in the presence of catalysts. Catalysts, in order of decreasing efficiency are cuprous chloride, cobaltous oxide, manganese dioxide, nickel oxide, and vanadium pentoxide.[72] The effect of the vanadium oxide was a function of the quantity present, and this might also be true with the other oxide catalysts. Ferric oxide, ceric oxide, chromic oxide, molybdic trioxide, and an uranium oxide, U_3O_8, also catalyzed methane oxidations.[72]

Both perchloric acid and ozone have been used in alkane oxidation. The acid was used with methane, ethane, and heptane and resulted in in-

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TABLE 3—CATALYTIC OXIDATION OF PARAFFIN HYDROCARBONS

Hydrocarbon—	Reaction conditions— Temperature	Catalyst	Reaction products—
Methane		Nitrogen oxides	Unstable complex forming formaldehyde and nitrogen peroxide.
		Methyl nitrate	Used as promotor of oxidation of methane.
5% methane in air		Pt wire	Reaction rate increased.
Methane-oxygen	At lower temp. than with Pt.	Ag and Cu	Reaction rate not increased as much as with Pt.
Methane-oxygen		Vanadium oxide	Almost as effective as Pt.
		CuO	Complete oxidation.
		Pb, Cr_2O_3	Less effective than CuO.
		Oxides of Fe, Sn, Zn, and Co	
Methane		CuCl	The catalysts are listed in decreasing order of their efficiency in oxidation of methane. Vanadium oxide efficacy is a function of the quantity present.
		CoCl	
		MnO_2	
		NiO	
		V_2O_5	
Methane		Perchloric acid	High CO content.
Methane	Silent electric discharge	Ozone	Formaldehyde, formic acid.
Methane		Ozone	Carbon dioxide, formic acid, acetic acid.
Methane	Cold	Ozone	Formaldehyde, formic acid, traces of methyl alcohol.
Ethane		Selenium oxide	Incomplete oxidation to glyoxal, acetic acid and carbon dioxide.
Ethane		Perchloric acid	Incomplete oxidation.
Ethane		Ozone	Incomplete oxidation.
Propane		Ozone	Acids, aldehydes.

complete oxidation with a high carbon-monoxide yield.[74] Ozone was used in combination with oxygen for oxidation of the normal alkanes, propane through octane excluding pentane, and the iso-compounds, 3-methylheptane and 2,2,4-trimethylpentane.[75] The oxidation, producing acids and aldehydes, began at lower temperatures when ozone was present than when pure oxygen was used. Normal octane was more resistant to ozone oxidation than *n*-heptane or the branched octane, 3-methylheptane. The 2,2,4-trimethylpentane, however, reacting as most branched alkanes, was more difficult to oxidize than the *n*-octane. At higher temperatures at which alkanes and oxygen normally begin to react, ozone appeared to have a catalytic effect.

The treatment of alkane-nitric acid reactions will be discussed under nitration.

A further reaction that has been shown to take place in the presence of oxygen,[1] especially the higher homologs of the alkane series is that of dehydrogenation. Between 700° and 800° C. formation of olefins occurs by two types of reaction; the first is one of primary dehydrogenation where the olefin containing the same number of carbon atoms and hydrogen is formed; and the second results in demethanation, a molecule of the olefin with one less carbon atom than the starting paraffin and methane being formed. Certain types of activated carbon have been found which catalyze the first reaction rather than the second; steam-activated brown coals treated at 800° to 900° are most reactive.

Mixtures of hydrocarbon gases in the form of refinery and natural gas are far more available than the purified hydrocarbons hitherto discussed, hence they have been utilized in oxidation reactions on a commercial scale for the production of alcohols, formaldehyde, acetaldehyde, and other oxygenated compounds. The following products from petroleum hydrocarbons together with quantities produced in 1939 have been commercially produced from petroleum hydrocarbons.

Ethyl alcohol	no figure given
Isopropyl alcohol	1,500,000 gal.
Acetone	124,000,000 lb.
Acetic anhydride	no figure given
Methylethylketone	no figure given
Glycol (ethylene)	no figure given

In addition to the oxygenated hydrocarbons formed from the gaseous members of the aliphatic series, the liquid hydrocarbons from the gasoline and kerosene fractions also yield useful oxygenated compounds such as fatty acids of both the saturated and unsaturated series which are used extensively in extreme pressure lubricants, naphthenic acids for soaps and paint driers, phenolic acids, cresylic acids and many other types of compounds having valuable properties as varnish driers, insecticides, and germicides.

Olefin hydrocarbons have been utilized in greater quantities from the petroleum industry than the paraffins. But there has been a process made available for the dehydrogenation of paraffins which makes the corresponding olefin from the paraffin,[76] thus the oxidation reactions may be applied after the dehydrogenation of the paraffin has occurred.

3. Oxidation of Alkenes

Oxidation reactions of the lower alkenes, especially ethene, indicate that the hydroxylation and peroxidation theories of alkanes may also explain the oxidation mechanisms of the unsaturated hydrocarbons. Cyclic oxides form readily at points of unsaturation. Chain propagation of alkene oxidation is evidenced by an induction period,[77] the inhibitory effect of excess oxygen,[78] and the retardation due to increased surfaces.[77]

Initial action of oxygen on the alkene molecule does not appear to be at the double bond.[43] Uncatalyzed alcohol formation from alkenes is a reversible reaction in which the equilibrium is well over on the alkene side.[79] The reaction is most favorable for the ethene and increasingly small yields are obtained as higher alkenes are used.

Nitric oxide and metallic salts and oxides have been used to catalyze the oxidation of alkenes. Catalytic hydration of alkenes produces alcohols, but equilibrium conditions are, in general, unfavorable for this reaction.

Ozone, hydrogen peroxide, selenium oxide, potassium permanganate, and peracetic acid have been used to oxidize alkenes. The structure of alkenes varied the point of initial oxidation with different oxidants.

A. Thermal Oxidation of Alkenes

Activity of 1-alkenes with oxygen is less intense than that of corresponding saturated hydrocarbons.[24] At high temperatures alkenes may undergo thermal decomposition in the presence of oxygen, but the reaction takes place at a rate much slower than the oxidation.[80] Ethene oxidation at temperatures between 300° and 525° produced ethene oxide and formaldehyde as initial products.[81] As the oxidation proceeded, side reactions yielded dioxymethylperoxide, acetaldehyde, formic acid, carbon monoxide and dioxide, hydrogen, and water. At temperatures above 500° polymerization became a dominant factor even when diluents were used. Other experiments with ethene indicated the formation of aldehydes and unsaturated alcohols previous to the formation of any oxides or peroxides.[37] In addition to forming oxidation products similar to those of ethane, propene also formed decomposition and polymerization products.[82] Propene and isobutene reacted with oxygen much more rapidly than ethene.[46] 2-Butene oxidation produced butadiene which may have resulted from decomposition of 2,3-butene oxide formed early in the reaction.[83]

$$CH_2CHCHCH_3 \rightarrow CH_2 = CH - CH = CH_2 + H_2O$$
(with O bridging the CHCH)

Around 450° polymerization increased, and beyond 500° free carbon was formed. Oxygen consumption and general reactions of 1- and 3-heptene were similar and also resembled those of *n*-heptane.[84] Oxidation of the heptenes indicates that the initial action of oxygen is on a non-terminal saturated carbon atom. Oxidation of *n*-octene, except for a higher reaction temperature, was very similar to the *n*-octane reaction.[41] The similarity was sufficiently great to indicate that the octene reaction began not at the unsaturation but at the opposite end of the molecule.

Rate of alkene oxidation was decreased by intensive drying of the hydrocarbon.[85] Reaction velocity was impeded by an excess of oxygen and increased by increased alkene concentration.[77,78] Under higher pressures, alkene-oxygen activity rates increased[78] although the alkenes were less affected by pressure changes than the corresponding alkanes.[24]

Inert gases as diluents usually shortened the induction period of ethene[77] although a slight retarding by nitrogen has been reported.[85] Additions of formaldehyde or acetaldehyde increased the velocity, while ethene oxide had an inhibitory effect.[78]

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Care and Use of Rubber-Covered Steam Hose

STEAM hose is used, as the name implies, to convey steam from one point to another for a limited period of time. There are several sizes of steam hose in general use in plant; ¾-in., 4-ply; 1-in., 6-ply rubber covered; 2-in., 8-ply rubber covered with ⅜-in. spaced reinforcing wire; and ¾-in. bronze metallic.

The ¾-in., 4-ply rubber hose is used on 100-lb. line pressure on open-end-lance work. One end must always be open to atmosphere and at no time shall both ends be hooked up to withstand a static line pressure. The inspection and test of this hose is the responsibility of the department having same.

The 1-in., 6-ply and 2-in., 8-ply are used for temporary hookup. Either of these hoses can be connected both ends into a steam line if steam pressure does not exceed 150 lb., but cannot be hooked up for longer period than 1 week at which time hose must be returned to tool house for inspection and hydraulic test. Hose is not to be moved to another location until it has been tested and inspected by tool department.

The ¾-in. metallic hose is to be used where permanently connected and under constant pressure, such as tank-car loading racks. The inspection and test is the responsibility of the department having same.

Examine hose for defects, see that static wire is running from coupling to coupling inside of rubber hose. Hose must be laid in as straight a line as possible without any kinks.

Do not use planking or other makeshifts for protection at road crossing, obtain proper protector designed for this purpose from tool department.

Do not drag hose over ground or jerk it to free same when caught.

Return 1 and 2-in. hose to tool house for weekly inspection, immediately after job is completed, or after it has been in service for 1 week.

When a job is going to be of long duration, use pipe instead of 1 or 2-in. hose.

Do not allow any rubber hose to lie in oil, as oil causes rubber to loosen from fabric.

Do not allow hose to come in contact with sharp objects, or expose outside covering to high temperatures such as hot oil lines.

If hose develops defect while in service, return to tool department, reporting defect to attendant.

If hose is exposed to acid, wash thoroughly before returning to tool department.

Coil hose and tie with light rope (coil to be not less than 42 in. in diameter) before returning to tool department.

This hose can only be purchased with approval of government board.

Mitigation of Underground Corrosion of Pipe Lines

FOLLOWING the presentation of some information from a review prepared by National Bureau of Standards, U. S. Department of Commerce, entitled, "Corrosion in Soils," which appeared in the September 24 issue in an article, entitled, "Study of Corrosion Aids in Protection of Pipe Lines," this week additional information from the same source is presented below. The preceding article contained discussions of such matters as the theory of underground corrosion, identification of corrosive soils, and criteria for corrosion and corrosivity. Both articles are accompanied by bibliographies.

The National Bureau of Standards has prepared this review to acquaint men throughout the industry with conclusions reached by the bureau.

The Mitigation of Underground Corrosion

Selection of exposure.

Under certain conditions some choice may be exercised in the location of structures underground. A soil survey may disclose local areas of corrosive soils which may be avoided. Well-drained areas should be selected for the sites for graveyards, tank farms, filling stations and other projects requiring buried tanks or other containers. Rights-of-way for pipe lines may sometimes be modified to avoid swamps, alkali spots, peat bogs and other corrosive soils. Often other things are more important than the saving to be realized through any practical change in location, but the possibility of avoiding corrosion through an advantageous choice of soil conditions should be considered.

Closely related to this is the drainage of low areas, drainage of the trench in which a pipe is to be placed, and the backfilling of the trench with sand or other noncorrosive material in places where the pipe passes through the filled or contaminated ground.

The writer understands that several pipe-line owners have experimented with the addition of lime or crushed limestone to pipe trenches, but no reports of the success of the experiments have reached him. Evans[5] reports success with backfills of lime.

Careful tamping of the soil around the lower half of the pipe will reduce voids and differential aeration. This practice is required in many cities for the protection of paving rather than to reduce corrosion. Pitting has been observed where rocks, sticks or other solid material have been placed in contact with pipe accidentally, and several pipe-line companies take precautions to eliminate this cause of corrosion.

It has been observed that corrosion tends to increase with the depth at which pipes are laid.

Choice of corrosion-resistant materials.

There is a longstanding and continuing demand for better pipe materials, and many materials are offered to meet this demand. That some materials are more resistant to corrosion than others cannot be doubted. Whether the more resistant material is more economical is quite a different question, the answer to which depends largely on the cost of leaks.

There is little difference in the rates of corrosion of the commonly used ferrous pipe materials when they are exposed to the same soil conditions. These differences are of the same order of magnitude as the variations in the performance of different specimens of the same material. The average of the results of the Bureau of Standards[49] soil-corrosion tests indicate that wrought iron corroded slightly less and cast iron slightly more rapidly than Bessemer steel during the first 12 years of exposure, but that the relative merits of these materials differ for different soil conditions. The addition of a few per cent of chromium to steel may slightly reduce the loss of weight but has little effect on the maximum pit depths.[44,50] The addition of nickel to steel seems to be slightly more effective, but corrosion is not greatly reduced until the percentages of these materials become sufficient to materially affect the cost of the alloy. An iron alloy containing 14 per cent of Si is very resistant to most soils though hard to machine and brittle.

According to Burns,[51] lead is very resistant to conditions which are favorable to the production of films of lead sulfate or carbonate, but Shipley[52] found lead corroded by sodium carbonate. The Bureau of Standards tests show little corrosion of lead in soils containing carbonates and bicarbonates. Occasionally soils are encountered which cause the formation of deep isolated pits in lead pipe. In most soils corrosion penetrates lead a few thousands of an inch, which is more than the thickness of most lead coatings applied to pipe. For this reason, as well as because they contain pinholes, lead coatings have not been generally successful underground.

Cathodic protection.

Since corrosion can only occur at points where the metal is anodic with respect to the adjacent electrolyte it might be prevented by making the entire pipe a cathode. This is accomplished by connecting the pipe to the negative pole of a source of direct current, the positive pole being connected to an electrode suitably placed in the electrolyte. This method of preventing corrosion is known as cathodic protection. Some of the more important of the many papers on this subject have recently been summarized in a paper prepared for distribution by the Bureau of Standards.[57] This system of protection may be applied to coated or to unprotected pipe lines and to pipe networks already installed. Under some conditions, protection of pipes cathodically is less expensive than any other means of keeping them in service. The cost depends in part on the amount of current required which is greatly reduced if the pipe is covered with an insulating coating. Even a poor coating considerably reduces the consumption of current. Whether coatings should be used in connection with cathodic protection is a much-debated question, the answer to which depends on the cost, effectiveness, and life of the coating. Unfortunately, data on the life and effectiveness of coatings are quite limited and conflicting; but a fairly satisfactory answer regarding the advisability of combining cathodic protection and a protective coating can be obtained on the basis of reasonable assumptions as to all costs and as to the service to be expected of the coating.

Insulation and insulating joints.

Since an electrical current is an essential feature of most underground corrosion, anything which will interrupt this current will stop the corrosion. Most protective coatings are intended to do this. If corrosion is the result of stray currents, long-line currents or the joining of two different metals an insulating joint inserted where the current is greatest will prevent or retard corrosion. Since current in a pipe in an electroylte may leave the pipe on one side of the joint and return on the other side, a long leakage path should be provided either by an insulating coating on either side of the joint, or by placing the joint in a manhole or box kept free from conducting material.

A number of inexpensive and effective insulating joints are on the market or may be improvised. Insertion of these joints in a new pipe line costs little, but installation in a working line is much more expensive and sometimes impractical. Insulating joints are especially useful in preventing contact between different metals which otherwise might cause galvanic action.

Nonmetallic pipe.

Nonmetallic pipe has been suggested for use in corrosive soils. Pipes made of bored logs were extensively used to carry water in the early history of this country and some of this pipe served many years. This led to the development of wood-stave pipe, which is now used quite extensively in certain parts of the country, especially where large-diameter pipe is required. This type of pipe has proven satisfactory where it could be kept full of water or covered with moist noncorrosive soil. Corrosion of the iron bands used to hold the staves together has caused trouble in some localities.

About 1930 there was introduced into this country cement-asbestos pipe, which was developed in Italy in 1913, and had been used in several countries of Europe. The Underwriters' Laboratories, Inc.,[58] has published a report on one brand of this pipe and has listed it for use with limitations. Cement-asbestos pipe absorbs some moisture from wet soils and does not have the strength per unit cross-section of steel or cast iron. As a pipe it performs mechanically more like cast iron than steel. It is apparently unaffected by alkali soils, but shows superficial softening when exposed to acid soils under some conditions.

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Mathematical Correlation Of the Paraffins

By PAUL BUTHOD, LUCILE ROWELL, EDWARD STEWART, JR., and PROF. WALTER S. FOSTER
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The complexity of the three-way relationship of vapor pressure, temperature and type of material is so great that tabulations or curves have been widely used in presenting vapor-pressure data. In this paper is derived a mathematical equation by which the vapor pressure of any of the lighter paraffin hydrocarbons may be computed from only the temperature and the number of carbon atoms in the hydrocarbon:

$$\text{Log } P = 0.08522n + 5.18573 - \frac{853.4n^{0.8625}}{T}$$

in which

P = vapor pressure, lb. per sq. in. abs.
n = number of carbon atoms in the molecule
T = temperature, °F. abs.

VAPOR pressures of the lighter hydrocarbons are extremely useful in engineering design work but most such data are presented in a graphical or tabular form. Curves are widely used but it is difficult to obtain accurate readings from them. The tabular form, though more accurate, requires interpolation or even extrapolation in some instances. The purpose of this study is to prepare an empirical equation of vapor pressure versus temperature, by using the method of least squares. A correlation was made between the coefficients obtained in the empirical equations and the number of carbon atoms in the respective hydrocarbons.

The usual form, and the form accepted in this paper for a vapor-pressure curve, is as follows:

$$\text{Log } P = B - \frac{A}{T} \qquad (1)$$

$$\text{or} \quad T \log P = bT - A \qquad (2)$$

The latter form may be treated as a linear equation in applying the method of least squares. The method of least squares is presented in detail by Sherwood and Reed.[1] Application of the method of least squares involves insertion of all of the experimental data into these equations:

$$\Sigma T \log P = \Sigma BT - \Sigma A \qquad (3)$$

$$\Sigma T^2 \log P = \Sigma BT^2 - \Sigma AT \qquad (4)$$

Equations 3 and 4 are then solved simultaneously for the most accurate values of A and B. The values of A and B are shown in Table 1.

The equations are relatively accurate in the higher pressure and temperature ranges approaching the critical temperature but they deviate considerably from the true values in lower ranges of pressure. The range and accuracy of the equations are indicated in Table 2.

The values of A and B were studied by plotting them against the number of carbon atoms (n) in the molecule. Examination of Fig. 1 shows that A versus n is a parabolic function of slight curvature. Equations 5 and 6 were derived in a manner similar to that used in deriving Equations 3 and 4.[1]

$$\Sigma k_1(\log n) + \Sigma \log k_2 = \Sigma \log A \qquad (5)$$

$$\Sigma k_1(\log n)^2 + \Sigma \log k_2 \log n = \Sigma \log n \log A \qquad (6)$$

The solution of Equations 5 and 6 for k_1 and k_2 yields the following equation:

$$A = 853.4\, n^{0.8625} \qquad (7)$$

In a similar manner the values for B were plotted against the number of carbon atoms in the molecule. Fig. 2 shows this to be a linear relation. Equation 10 was obtained from Equations 8 and 9 by the method of least squares.

$$\Sigma k_2 n + \Sigma k_1 = \Sigma B \qquad (8)$$

$$\Sigma k_2 n^2 + \Sigma k_1 n = \Sigma B n \qquad (9)$$

$$B = 0.08522\, n + 5.18573 \qquad (10)$$

Equations 7 and 10 were used to determine the coefficients A and B for the general form (1) and the accuracy of the equations was again checked. Table 3 gives the maximum deviation of these calculated values from the original data.

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TABLE 1

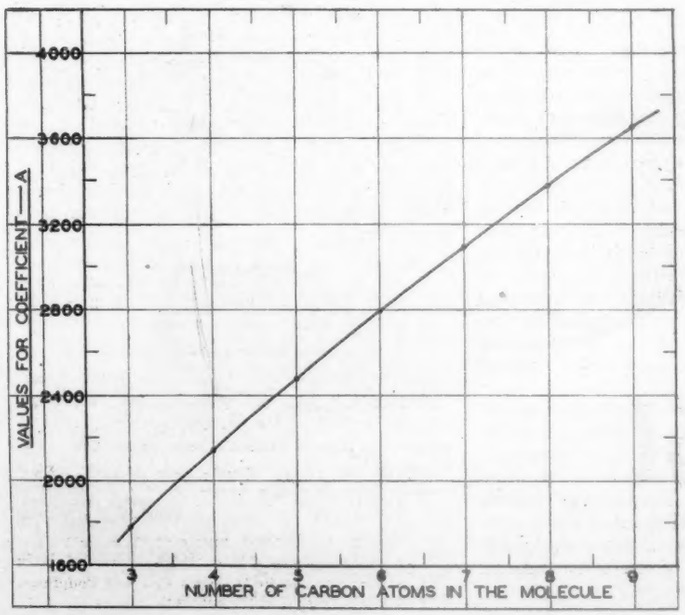
Hydrocarbon—	A	B	Reference
Propane	1767.1	5.4414	(2)
n-Butane	2138.1	5.5266	(3)(4)
n-Pentane	2478.8	5.6118	(3)
n-Hexane	2797.0	5.6971	(5)
n-Heptane	3097.7	5.7823	(6)
n-Octane	3384.3	5.8675	(5)
n-Nonane	3658.9	5.9527	(5)

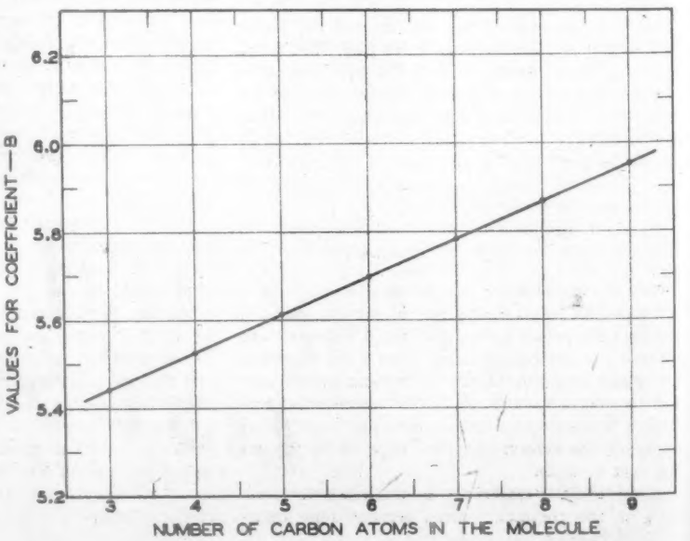
TABLE 2

	Pressure range, lb./sq.in. abs.	Temperature range, deg. Rankine	Deviation, per cent	
Propane	40-617	465- 666	+0.5	—0.5
n-Butane	10-550.1	474- 766	1.0	2.0
n-Pentane	25-485.4	586- 847	0.5	1.0
n-Hexane	5-434	560- 914.6	4.0	4.0
n-Heptane	15-396	670- 973.3	1.0	2.0
n-Octane	5-370	656-1024.6	2.5	4.0
n-Nonane	2-335	647-1073	4.0	4.0

TABLE 3

	Deviation range (per cent)	
Propane	+4.0	—0.0
n-Butane	2.0	2.0
n-Pentane	0.0	2.5
n-Hexane	1.0	4.0
n-Heptane	1.0	3.0
n-Octane	1.5	4.0
n-Nonane	5.0	3.0





Left: Fig. 1—Plotting values of A against n gives a parabolic function of slight curvature. Right: Fig. 2—B plotted against n shows linear relationship

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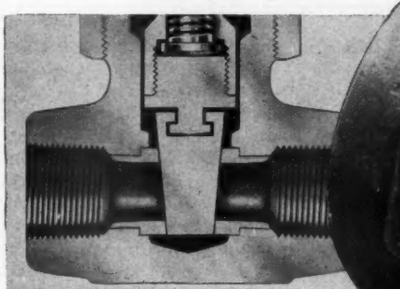


. . . and wear can't chew the Plug or seat of a

CHAPMAN LIST 960 FORGED-STEEL GATE VALVE

GLOSSARY of terms used in PETROLEUM CHEMISTRY

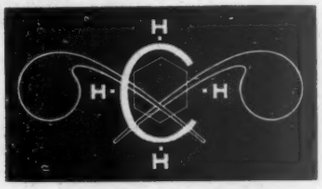
Isomerize

Processes used to convert an initial compound into a new isomeric compound. Thus *n*-butane may be catalytically isomerized to isobutane.

$$CH_3CH_2CH_2CH_3 \rightarrow (CH_3)_2CHCH_3$$

Ortho, Meta, and Para

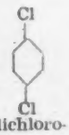
Are prefixes used to distinguish isomeric disubstituted benzene compounds. It is common practice to abbreviate these prefixes *o*, *m*, and *p*,



respectively. (The benzene ring is commonly shown as a hexagon, disregarding the alternate double bonds.) Examples:

o-dichlorobenzene

m-dichlorobenzene



p-dichlorobenzene

Plasticize

Used primarily in discussing the production of resins or synthetic rubbers. It means to render these into the plastic which can be worked or molded.

Polymerize

In recent years refiners have had available to them processes that would bring together certain hydrocarbons as well as separate others by cracking. The action of bringing about the chemical union of two or more similar molecules to form another compound having the same elements in the same proportion but of a higher molecular weight is known as "polymerization." The product will differ, of course, in physical properties from the original materials.

Pyrolysis

The chemical decomposition of a substance as the result of applying heat.

Sulfonate

Often used to describe the substitution of the sulfonic group (SO_3H) for a hydrogen atom of a hydrocarbon system. It is done particularly in instances where it is desired to convert aromatic hydrocarbons to phenols, e.g., benzene to carbolic acid.

Some chemists define a sulfonate as the salt or ester of a sulfonic acid.

Synthesis

The procedure whereby a compound is built up chemically from its elements or combinations of its elements. Because petroleum is essentially a combination of hydrogen and carbon, and because these elements serve as important constituents of many articles of trade, recent petroleum research has been eagerly investigating the use of petroleum hydrocarbons in the synthesis of solvents, motor fuels, plastics, explosives, glycerin, etc.

Vulcanize

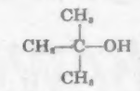
Although the term is freely used, its exact chemical significance is not fully understood. It is generally applied to the alteration of the properties of natural rubber by the addition of sulfur. Some of this sulfur reacts chemically with the rubber molecule while some is held physically by absorption. The property of natural rubber to combine chemically with sulfur at elevated temperatures affords a means for bonding a mixture of fresh rubber and sulfur to an injured tire, for example. The process also covers the addition of sulfur to the rubber by means of sulfides. The practical value of adding sulfur is to greatly extend the elastic life of the vulcanized rubber through a wide range of temperatures. Sulfur has a stabilizing influence with respect to elasticity.

Unsaturates

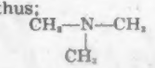
Is a rather loosely used word designating commonly any unsaturated hydrocarbon. These may contain one double bond (olifinic, e.g. $CH_2=CH_2$), one triple bond (acetylene, e.g. $CH\equiv CH$), two double bonds (dienes, e.g. $CH_2=CH-CH=CH_2$) or even more complicated compounds in which a combination of double and triple bonds may exist.

Tertiary

Refers to the number "three" and has several usages, especially in organic chemistry. Thus a tertiary alcohol has three (3) carbon atoms linked to the carbon atom linked to the OH group. Thus, tertiary butyl alcohol is



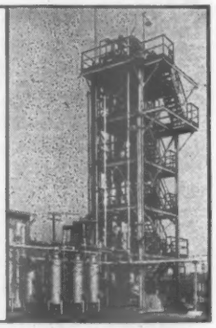
A tertiary amine, however, has three C's linked to an N atom, thus;



A tertiary H is one linked to a C and to which is linked three other carbons, thus in isobutane $(CH_3)_3C-H$, the final H is said to be tertiary.

CHEMICALS *from* PETROLEUM

By W. T. ZIEGENHAIN



NITROPARAFFINS

THE combination of the NO_2 radical with the simpler hydrocarbons found in petroleum has supplied a family of materials known as "nitroparaffins." For many years hundreds of researchers had tried to effect this union but with only partial success. They had recognized the favorable properties of the products but were unable to effect a commercial procedure for their manufacture. However, in comparatively recent years this has been perfected and has been placed in commercial operation. Nitro combinations of methane, ethane and the two propanes are commercially available in large quantities.

As a class, the four nitroparaffins mentioned are essentially solvents and find specific use as such in the industries making cellulose acetate, vinyl resins, nitrocellulose, synthetic resins, dyes, oils, fats, and waxes. Although nitroparaffins are called upon at present to act as solvents for a broad list of industrial products, they also promise to figure prominently in the synthesis of other petroleum hydrocarbons.

The present commercial production of the basic nitroparaffins involve patents which obviously cannot be evaluated here. Therefore, only the properties of the four materials will be detailed.

Nitromethane.—Boiling point, 214.6° F.; flash point, 234° F. (Tag open cup); molecular weight, 61.04; specific gravity, 1.139; vapor pressure, 27.8 lb. per sq. in. at 68° F.

Nitroethane.—Boiling point, 237.2° F.; flash point, 222.8° F. (T.O.C.); molecular weight, 75.07; specific gravity, 1.052; vapor pressure, 15.6 lb. per sq. in. at 68° F.

1-Nitropropane.—Boiling point, 268.9° F.; flash point, 248° F. (T.O.C.); molecular weight, 89.09; specific gravity, 1.003; vapor pressure, 7.5 lb. per sq. in. at 68° F.

2-Nitropropane.—Boiling point, 248.5° F.; flash point, 218° F. (T.O.C.); molecular weight, 89.09; specific gravity, 0.992; vapor pressure, 12.9 lb. per sq. in. at 68° F.

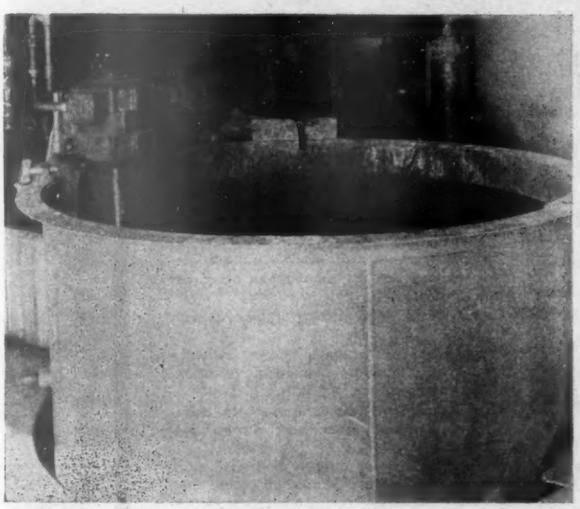
The properties of trinitrotoluene are probably more discussed than any of the NO_2-hydrocarbon combinations. Its properties, other than its explosive value, might prove interesting. There are 3 trinitrotoluenes, alpha, beta and gamma, the names indicating the arrangement of the NO_2 groups on the ring. All are yellow in color and in pure form are needlelike crystalline solids. Each weighs about 1.6 times water. Each is soluble in ether, and alcohol but insoluble in water.

Refinery IDEAS

. . . that save $ $ $

Electrically Driven Propeller Mixes Caustic Solution

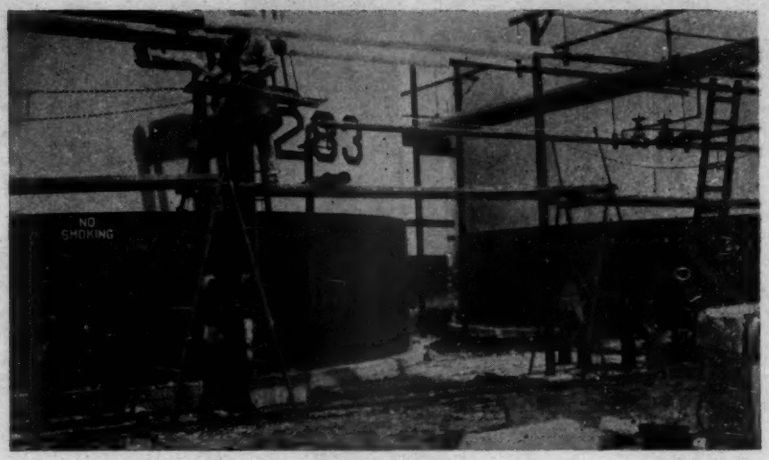
Refiners and natural-gasoline plant operators have devised many means for making up the caustic solution with which they treat the gasoline or other distillates. In many plants, a stream of exhaust steam impinging upon the open end of a caustic drum is still a familiar sight. However, increasing use is made of liquid caustic purchased in the concentrated dissolved form. Buying the material in this form allows it to be stored in tanks and



to be diluted to optimum concentrations for treating more easily and quickly, providing suitable mixing equipment is available. Here the operator has installed an electrically driven propeller and shaft. The latter reaches nearly to the bottom of the tank and the matter of diluting the concentrated caustic to the desired strength is simply the problem of allowing the predetermined quantities of caustic liquid and water to flow into the tank which may be easily gaged. Then, the electric motor is run to mix the solution. The turbulence set up by the propeller is sufficient to cause solid pieces of caustic to dissolve readily if the solid caustic is preferred.

Steel Horses Solve Problem of Economically Servicing Lines

Every refiner and gasoline-plant operator is faced with having to service overhead lines. Usually the cost of erecting temporary scaffolding represents a substantial portion of the entire job. One company has overcome the periodic expenditure of this money through the assembly of rugged, yet light steel horses made from junk pipe;



above are shown the 8-ft. steel scaffold horses. The chain handrail posts are held in position by a key and telescope into the 1¼-in. pipe legs when not in use or when the scaffold boards are used on any of the lower ledgers. The handrail chains are double lengths of small chain with harness snaps at each end. Thus any pair or series of horses may be hooked together forming a continuous scaffold with a safety rail which will satisfy the safety department. These folding horses are 3 ft. wide to accommodate a standard three-board scaffold. The 8-ft. and the 12-ft. high sizes have 1¼-in. legs or side members and 1-in. ledgers on 2-ft. spacing.

Device For Replacing Electric Light Bulbs

At some pipe-line stations, it has been found that much time can be saved in removing burned out light bulbs and installing new ones. This is accomplished by doing this work with a special device which consists of a long pole with a light, flexible wire cage at the end of it. The operator slips the cage over the light bulb. There is enough spring in the wire to grip the bulb so that it may be either unscrewed or screwed into the socket. The use of this device saves the time and trouble taken in carrying a ladder around to the places where replacements must be made overhead.

Rumbler For Cleaning Pipe and Structural Shapes

This "rumbler," for cleaning pipe, tubes, structural steel shapes, etc., was constructed from a junk 6-ft. by 22-ft. tower shell. The large gear is a discarded ring gear from a hoist. The unit is driven by a steam engine. The trolley beam extends inside the drum a distance of 8 ft. in order that the heavier lengths of pipe may be handled with ease. The drum is usually filled about one-fourth full of the material to be cleaned and is rotated about 12 times per minute for 15 minutes. The material is then removed and is free from rust and scale both inside and outside and is ready for reuse. The material is distributed throughout the drum in a manner that will allow pieces of metal of different shapes and sizes to tumble over each other in trying to effect a maximum number of metal contacts.

PROTECT YOUR POWER EQUIPMENT FROM "ENEMY!"

PROPER MAINTENANCE GREATLY PROLONGS LIFE OF MOTORS AND HELPS TO CONSERVE MATERIALS AND MAN HOURS . . . !

Among the worst "enemies" at large in industry is deterioration and untimely breakdown of vital mechanical equipment. Precious time is lost and production of Victory material hampered when breakdowns occur.

Since Electric Power is vital to our Victory program, it is *important* that motors and other power equipment be kept in perfect operating condition at all times. Much valuable material has been prepared on the subject of proper maintenance and care of motors, from which the information in box at right has been reproduced. Read these suggestions carefully, and put into practice. Don't let breakdowns interrupt your march to VICTORY!

ELECTRIC MOTOR INSPECTION SCHEDULE

EVERY WEEK

1. Examine commutator and brushes.
2. Check oil level in bearings.
3. See that oil rings turn with shaft.
4. See that shaft is free of oil and grease from bearings—keep oil where it belongs.
5. Examine starter, switch, fuses, and other controls.
6. Start motor and see that it is brought up to speed in normal time.
7. Keep windings clean.
8. Check alignment of motor with machine to which it is directly connected.

EVERY SIX MONTHS

1. Clean motor thoroughly, blowing out dirt from windings and wipe commutator and brushes.
2. Inspect commutator clamping ring.
3. Check brushes and renew any that are more than half worn.
4. Examine brush holders and clean them if dirty. Make sure that brushes ride free in the holders.
5. Check brush pressure.
6. Check brush position.
7. Drain, wash out, and renew oil in sleeve bearings.
8. Check operating speed or speeds.
9. Check grease in ball or roller bearings.
10. See that end play of shaft is normal.
11. Inspect and tighten connections on motor and control.
12. Check current input and compare with normal.
13. Run motor and examine drive critically for smooth running, absence of vibration, worn gears, chains, or belts.
14. Check motor foot bolts, end-shield bolts, pulley, coupling, gear and journal set-screws, and keys.
15. See that all motor covers, belt and gear guards are in good order, in place, and securely fastened.

ONCE A YEAR

1. Clean out and renew grease in ball or roller bearing housings.
2. Test insulation by megger.
3. Check air gap.
4. Clean out magnetic dirt that may be hanging on poles.
5. Check clearance between shaft and journal boxes of sleeve-bearing motors, to prevent operation with worn bearings.
6. Clean out undercut slots in commutator.
7. Examine connections of commutator and armature coils.
8. Inspect armature bands.

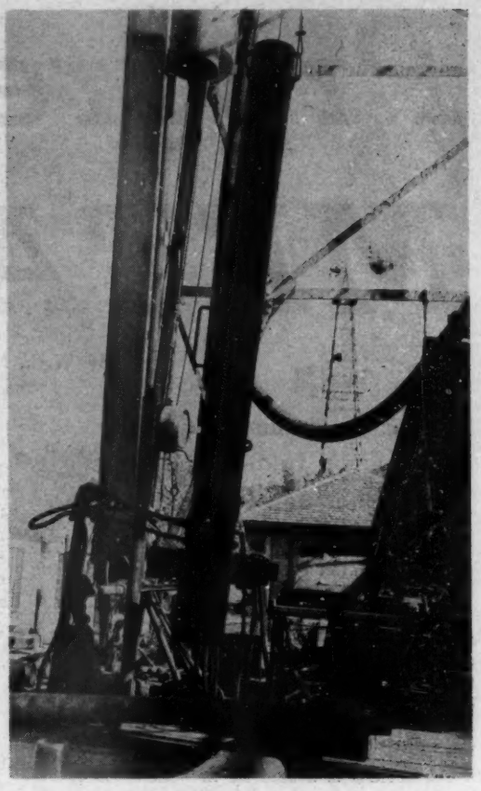
Use Utility Electric Power!

PETROLEUM ELECTRIC POWER ASSOCIATION

Operating Ideas

Core-Reel Unit Mounted on Derrick Ramp

A deep-drilling rig operated by a major company in South Louisiana includes a steam-engine-driven wire-line-coring-reel unit mounted on a skid. There is not space on the derrick or engine floor for the entire unit, so, to avoid providing a derrick-floor extension, the company places the unit at the ramp side of the derrick floor with only the reel-end of the skid resting on the derrick floor, leaving the engine end protruding over the ramp. The back end is equipped with two jack legs which rest on the ramp and by which the height of the back end of the skid can be adjusted to level it. When not in use the legs swing over the top of the skid out of the way. The ramp location is convenient for setting up or moving the unit.



Belting Strip Seals Mud Box Bottom

To prevent drilling mud from slopping out around the bottom of the mud box when breaking out drill pipe, an Oklahoma drilling contractor has riveted a strip of 12-in. belting around the bottom of the box. The belting acts as a cushion and seal when resting on the rotary table so that the mud drains back into the cellar or mud-box drain below the derrick floor. It is easily replaced when worn.

Hinged Cover Opens Easily

A Texas drilling contractor has replaced the conventional bolted inspection cover plates on his rotary mud pumps with a hinged cover that can be opened quickly just by turning a handle. The hinged cover is sealed by a gasket. It inspires frequent inspection.

Derrick Floor Built In Sections →

Derrick floor made up in sections, of two layers of planks each, is used by one contractor instead of laying timbers across the entire width of the substructure. The sections are fitted to cover the entire space, each unit being planned to bridge between wide beams of the substructure, and each equipped with a short loop of chain in the center for ease in handling with a hook. When not actually used in handling a section, the chain loop, threaded through holes in the planks, drops below floor level and thus does not endanger the drilling crew. Double wear is obtained from the sections by turning them over and using the other side.

Progress in METALS

By W. L. NELSON

Surface Hardening By Induction Heating

A SOMEWHAT new operation known as induction hardening would seem to be applicable in many ways in the petroleum industry. The process is generally similar to flame hardening except that a high-frequency electrical current is used for the heating rather than an oxyacetylene flame. In many instances, heating by electricity permits the hardening of surfaces that cannot be heated or hardened by regular methods because of the shape of the surface, notably internal surfaces such as the internal surfaces of the working barrels of deep-well pumps.

The surface is heated by induction and is immediately quenched with water or other suitable quenching agents. Obviously, the heating can be controlled with ease. Steels containing more than 0.4 per cent carbon must be used because quenching does not greatly harden steels of lower carbon content. The process is discussed in the following articles: E. F. Cone, "Tractor Parts Rapidly Hardened by Induction," Metals and Alloys, Page 687, November 1941; E. F. Cone, "Crankshafts and Other Parts Surface Hardened by Induction Heat," Metals and Alloys, Page 1, January 1938; F. T. Chesnut, "Induction Heating in War Production," Metals and Alloys, Page 851, December 1941; and a bibliography of 40 references on this subject is obtainable from the Engineering Societies Library, New York, at small cost.

Steels for Refinery Services

THE war and the scarcity of certain alloy elements such as chromium and nickel make it necessary that refiners do all that is possible in conserving these critical alloy elements. For many services little can be done about the situation, but in other services it will be possible to use plain carbon steels or low percentages of alloy elements without suffering any damage except the cost of more frequent replacements or the cost of using heavier thicknesses of metal. Such practices might not be considered as efficient under normal conditions but at the present time they may be actually less costly particularly if difficulty is encountered in obtaining the alloy steels.

High-Temperature Services

For temperatures up to 500° F. cast irons can be substituted for steels in a multitude of piping services. Above 500° F. cast irons are normally entirely excluded but under present conditions the cast irons might be used for some services and malleable irons would seem to be particularly suitable. Up to a temperature of 750° F. there is no need to use alloy steel and fittings, but at higher temperatures it will continue to be necessary to employ small amounts of molybdenum (0.5 per cent) in order to obtain high-temperature creep strength. At such high temperatures both the plain carbon and carbon molybdenum steels rust or scale rapidly in the presence of furnace gases or air, and they are attacked vigorously by the sulfur in many oils. For this reason, less steel may be used over a period of time, if alloy steels are employed rather than plain carbon or carbon molybdenum steels, and certainly this is true for exceedingly high-temperature processes such as thermal reforming (1,000°-1,100° F.), vapor-phase cracking (1,050°-1,200° F.), thermal dehydration (1,100° F.), or thermal polymerization (1,000°-1,050° F.). Much the same is true for tube supports in pipe stills or furnaces.

Necessity of Alloy Steels

For the extreme high-temperature services just enumerated, it has been common to use steels that are high in chromium and for more extreme conditions a large percentage of nickel. In this emergency, the chromium content can be reduced materially without resulting in anything more serious than a shorter useful life. In addition, certain readily available elements, notably silicon and aluminum (only 0.5 per cent is needed), greatly increase the resistance to scaling and sulfur corrosion and reduce the amount of chromium required. This helps in another way, because when chromium is reduced, the amount of nickel required is also reduced. Steels known as the Sicromo and Alcrosil steels are examples of steels that rely in part on silicon and aluminum to replace chromium.

Alloy-Steel Bolting

Not much can be done about the use of alloy-steel bolting (and the demand for bolting has already resulted in a bottleneck) except to utilize welded joints and prefabricated piping as extensively as possible.

Become Accustomed to Molybdenum Tool Steels

THE scarcity of tungsten, the major element in tool steels, makes it imperative to adopt other types of tool steels. Among these, the molybdenum tool steels have already proved their worth, but many operators are not familiar with the differences between these and the tungsten tool steels. In this connection the following abstract from Metals & Alloys of January 1942, is thought to be of value:

Abstract: "Molybdenum High Speed Steels," by Gill & Rose, Iron Age, Vol. 148, Sept. 25, 1941.

The greatest difficulty with molybdenum high speed steel was its somewhat greater propensity to decarburization. Changes in manufacture, new developments in heat treating and chemical modifications have all been aimed at eliminating loss of surface carbon during treatment.

In the manufacture of the steel, the ingots are coated with borax or copper paint. The chemical composition has been modified by replacing small amounts of carbon with boron and by the addition of copper. All molybdenum steels can be heat treated without decarburization by the use of borax, by appropriate salt baths, or by treating in furnaces producing 20 per cent or more of carbon monoxide.

X-ray diffraction analysis shows that when molybdenum is added to high-speed steel, it replaced the tungsten atom in the double carbide. X-ray patterns of tempered specimens of 18-4-1 tungsten type, TM-2 (5-6 W, 4-5 Mo, 4.5 Cr, 4 V) and TH-3 (8 Mo, 4.5 Cr, 4 V) show three phases; retained austenite, primary martensite and the double carbide. The double carbide has the same parameter in all three types.

Tungsten Increases Stability of Austenite

Substantial replacement of molybdenum with tungsten increases the stability of the retained austenite. For complete austenitic transformation in 2 hours, a temperature of 1,020° F. is needed with TM-3 and 1,080° F. with TM-2.

Recently the standard high-speed types have been modified with higher carbon and vanadium contents. This trend reached its maximum to date in type TM-2 and results in abrasion resistance several times that of 0.70 per cent carbon 18-4-1.

Recent modifications in molybdenum high-speed steel composition have followed the lines of good logic—as, for example, in the so-called 5-4 type. When the molybdenum content is reduced to under about 5.5 per cent and replaced with between 5 and 6 per cent tungsten, the propensity toward decarburization is almost eliminated. Such steels can be heat treated even in "obsolete" gas and oil-fired furnaces without atmospheric control.

Tungsten-molybdenum and molybdenum high-speed steels can be used for almost all types of cutting tools. One of the requirements of high-speed steels is red hardness. The hot hardness of the type TM-1 steel (5-6 W, 3.5-5.5 Mo, 4 Cr, 1.4-1.75 V) is greater than the other molybdenum types. This is probably due to its appreciable tungsten content together with high vanadium.

Metal-Working Terms

Superfinishing

THIS relatively new development in grinding involves the advantages of honing whereby a bonded abrasive is used, and the advantages of lapping whereby low speed, light pressure, and random short motions are used. Both the work and the polishing stones move in a rotary motion and in addition two or more oscillation motions are imparted to the stones or work or both. This results in a highly random motion by which each part of the surface is traversed in many different directions. Much of the success of the process depends upon the fact that the random motions unload the minute particles of abrasive and grindings soon after they are produced. A large volume of washing fluid is used to remove the debris during the operation so that the surface of the polishing stones rather than the debris constitutes the main grinding agent.

By the operation of superfinishing it is possible to produce a surface variation of only 1 microinch whereas the surface variations by other recognized smoothing methods are somewhat as follows: Honed surface 10 microinches, and ground surface 50 microinches.

Trend in Operating Technique Points to Major Advances

(Continued from Page 11)

will eliminate this danger and fear of it. Some companies are already extending the time a tester is allowed to remain in the hole. Before long it may be common practice to leave a formation tester in the hole for a week or as long as it is necessary to obtain the desired information on that particular horizon.

This could be carried a step further with the well being tested through the formation tester and the drill pipe, the formation then shot with nitroglycerin, cleaned out and again tested before finally running the casing and cementing it. This would permit much heavier shooting without danger of casing collapse; it would be extremely valuable in cases where the pipe had to be run close to bottom in a none-too-thick producing zone. It would also be possible to obtain much better results than at present with acid using a process similar to this. Any danger of damage to the casing seat would be completely eliminated.

Formation Picture With Camera

Numerous advances in cement and cementing have been made in the past 10 years, but this problem is still with the oil producer and the service company. A recent tool, a positive slurry mixer, gives the cementer "finger-tip" control as the turn of the dial will automatically proportion the cement and water so any desired weight of cement slurry can be obtained. The day when every cement job, regardless of whether it is a casing, plug-back, or squeeze job, is a success is the goal.

In case there is any doubt as to what the formation looks like or as to what is in the well, it will soon be possible to take a picture of it with a small automatic camera. This device has been run experimentally several times and has given good results. So far, it has been impossible to obtain a picture in oil, although gas, water and mud are no obstacles.

Some companies are now struggling with the problem of replacing the drill pipe with casing. Many think this visionary while others are convinced it has sound possibilities. A few California wells have been drilled from top to bottom with 4½-in. tubing which proves the possibilities of this method in areas where the formations are relatively unconsolidated and soft.

So far the method is not suitable for use in "hard rock" country because the tubing threads and couplings will not stand the strains and shocks of such drilling. The greater weight used in drilling in such areas causes enormous strain which is concentrated on the pipe joints. However, the cost of drill-pipe wear in the hard-rock areas is much greater and the saving to be realized through the elimination of drill-pipe wear is more important than in those areas characterized by easy drilling.

There are several possibilities being worked on. One calls for the development of a satisfactory turbo-bit which will not depend on the turning of the drill pipe for its driving force. Such a bit has been mentioned in the Russian literature and several months ago American companies were working with it. The bit can be driven by the fluid stream pumped down the pipe. A fluid stream free from abrasive particles is essential for the satisfactory operation of such a bit.

Another method would be to modify the idea devised by Amerada Petroleum Corp., for continuous electrical logging while drilling. In this case the drill pipe was remodeled so an electrical conductor could be run from the surface to just above the bit. This circuit could be changed so a much greater current could be delivered at the bottom of such a drill string to make it operate efficiently. One possibility would be to run the bit in the hole on the drill string in the regular manner and then lower a cable with an overshot on it inside the pipe. The overshot would be equipped with electric couplings which would contact with those on the bit and current would be delivered in this manner.

Slim-hole drilling is a term introduced in the oil field in the past 5 years. Temporarily it has reached a limit as far as hole size is concerned, but the development of slim-hole rigs is only started, being temporarily delayed by the war. When normal conditions again prevail, streamlined rigs which can be moved in a few hours and which will have a rate of penetration far beyond those of today will be available. New materials, including aluminum and magnesium alloys and newly developed light steels, will play an important role in this development. Later on, it may again appear feasible to reduce the hole size still further without hurting the production operation of the wells.

Cable tools have not been without advances in the past 10 years and there has been a noticeable revival in the production of equipment and machinery for this type of drilling. The application of the dynamometer to cable-tool rigs has been noted. This is still confined mostly to one company and one area but the possibilities shown are of first magnitude. By using this or a similar instrument to show the driller how the bit is performing, the cost of cable-tool drilling will be reduced enormously.

Shaft wells have been tried with some success for the recovery of oil in shallow producing horizons in the eastern United States. This method is being developed at present and it does open up possibilities not considered in the past. It might be used in conjunction with other means of primary and secondary recovery in the shallow fields. Oil mining is still not a dead subject although it and the shaft well probably will wait on a favorable economic condition rather than for use as a means of producing oil more cheaply.

Production

Operating fields in a manner that they would flow almost their entire life is a possibility. This is dependent on the type of the field and the "type" of operator involved. The reservoirs would be tapped with a minimum number of wells, for efficient drainage the wells to be produced at a rate which would exactly balance the drive. The reservoir would be maintained at, or near, its original value through the life of the field. If it were necessary to increase the production from such fields, extra energy would be supplied to the reservoir so the pressure could be sustained while the output was boosted. Such a procedure would increase the ultimate recovery and substantially reduce the lifting costs. The ever-increasing number of pressure-maintenance projects and the fields under engineering control indicate that all pools may eventually be produced in a similar manner.

Production from wells will be metered and will be delivered to the pipe lines without loss of any vapors in some cases and in others the separation of the oil from the gas will be effected and the gas delivered to plants for processing, also with no loss of hydrocarbons. The introduction and proper development of metering may make it possible for the producing branch of the industry to emulate the example of the meat packers in "saving everything but the squeal."

One engineer is working on a method to reduce the viscosity of the oil in place so it can be more easily moved through the sand into the well bore. This would be a catalyst mixed with gas or air injected into the formation. The hope is that in many fields where the reduction in gravity has been appreciable, the recovery could be increased substantially.

The biggest advance will probably come in multizone completion of wells in fields where there are several pay horizons. This method is already in use in many areas but its application has not been as widespread as possible. Numerous tools have been developed for completion and production of such wells but more remain to be developed. Ultimately, it will be possible to produce several zones through one well bore as efficiently as each zone could be produced through individual wells. Where several methods of production (flowing, gas-lift and pumping) are required because of varying characteristics of the several sands, new equipment will be needed. What has already been accomplished in this direction is remarkable but it is only a start.

Open Pay Zone Selectively

Application of a similar principle will probably be used in numerous cases where the wells produce from one zone. Often the producing horizon is composed of zones of varying permeability and the present tendency is to open up the complete section so that higher initial production may be obtained. Many engineers feel that the ultimate production would be greatly increased if the well were completed so the oil from the less permeable streaks would be produced first while holding back production from the more permeable zones until later in the life of the well. More even drainage would be obtained and the production from the well would be stabilized from the beginning. This would require less investment in tankage, etc., for handling the initial flush and would greatly reduce the length of "stripper" period of the well.

Selective gun perforating of the casing, selective shooting and selective acidizing will play an important role in such a production program.

This trend is particularly vital in pressure-maintenance and repressuring projects as more even drainage is effected and the danger of channeling is minimized or eliminated. Once channeling is produced in secondary-recovery projects, the cost of the operation shoots upward. One engineer has developed a listening device which gives an indication of the amount of gas entering a particular section of the producing formation. Another is working on a method of accurately measuring the amount of gas going into each successive interval of the pay formation in the input wells. In a sense both of these devices are means of determining permeability of the formation in place.

The disposal of water in the bottom portion of a sand presents no insurmountable difficulties and it has the advantage of maintaining pressure and getting rid of the water at the same time. No salt-water-disposal wells will be needed, the salt water being injected into the producing horizon through the edge producing wells or into an upper and barren formation in the same well from which it is produced.

However, it may not be desired to get rid of the salt water. The brine contains valuable elements, particularly magnesium, and the necessity is for a cheap method of extraction. Some engineers are digging into the ways and means whereby the valuable constituents of the brine would be separated and the remaining water used to sprinkle the lawns or cool the engines. An efficient plant, designed to operate on comparatively small quantities of water is the objective.

In the production field there have been rather

large strides made in automatic control of tank batteries. The tanks fill up, the production is switched to another tank and full tanks are emptied, all automatically. This much has been accomplished.

One engineer contends the next step is to install automatic controls on the pumping units, the controls to be actuated by either an electrical circuit or by radio wave sent out over the power circuit. This engineer prefers the latter as it would eliminate wiring needed for the circuit. By turning a dial, the operator at a central point could start, stop, speed up or slow down the pump. Indicators would show when anything went wrong.

For those who are harassed by sucker-rod breaks and the difficulty of obtaining replacements at the present time, there is a better day coming. Lighter and stronger rods, more resistant to corrosion, may be available in a few years, which when used in conjunction with improved, shockless, pumping units, will last almost indefinitely.

Nothing has been said about the improvements being made in instruments, machinery and methods already in use by the petroleum industry. The possibilities along this line are so great as to prevent enumeration. There is, for instance, the deeper drilling which is bound to come. A 20,000-ft. well is only impossible because of the price of oil—after all, a boy able to swim 20 ft. can soon qualify for a marathon race.

An attempt may be made to entirely revamp the present producing method and convert the well into not only a means of producing crude oil but refining it as well. The general outline is to install a small fractionation unit in the bottom of the well. Some producing zones have almost enough heat and certainly enough pressure, to refine the crude now. This would probably not be a complete refining operation but would be a simple separation of the lighter fractions from the heavier ends.

●

Care and Use of Rubber-Covered Air Hose

AIR hose is used primarily in operation of pneumatic tools. When you obtain this hose, examine it for defects and see that it is properly equipped with coupling gaskets to prevent leaks.

When placing hose in service, remove all kinks and lay hose in as straight line as possible. Blow out hose to remove foreign objects.

Don't use planking or other makeshifts to protect hose where it is necessary to cross a roadway. Obtain a hose protector for this.

Don't allow hose to come in contact with hot objects, such as steam or hot oil lines.

Don't use hose as a dragline.

Don't jerk hose to free same when it becomes fouled.

Don't use hose for any material other than air.

Don't form habit of kinking hose to connect or disconnect.

Don't leave hose under pressure over a long period, if not being used.

Don't use hose for a permanent hookup.

When hose has been exposed to oil or chemicals, see that it is wiped off. On completion of use, if subjected to acid, wash thoroughly.

Hose that has been cut or damaged to the extent of exposing the cord fabric quickly deteriorates. We must guard hose in every way possible to eliminate this exposure.

When use of hose has been completed, hose should be promptly returned to tool house.

Any defects created or discovered during use of hose should be called to tool-room attendant's attention at time hose is returned.

Injuries Prevented by Rack for Trailers and Bolsters

A LARGE share of accidental injuries to field workers result from lifting and straining, in spite of the fact that workers are cautioned against this hazard. One of the principal reasons is the fact that frequently there isn't enough manpower available to do the job. The man, or men, must perform the task either by sheer strength or through ingenuity.

Not so many years ago most of the equipment used in the oil field could be handled by hand. It was possible for a drilling crew to put the line shaft in place by hand without the use of a winch truck or a derrick line. A few years ago, before the unitization of draw works to their present form, the putting of a line shaft in place was a chore requiring at least one and sometimes two trucks.

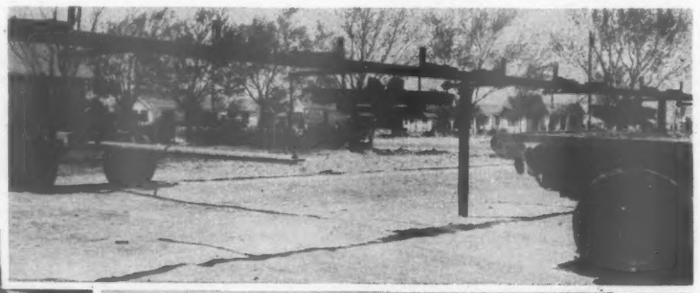
As the drilling and production equipment has grown, so have grown the trucks and trailers used to haul it about the field. The strength of the man who has to handle these items has not kept pace with the evolution. Formerly, the truck driver or swamper could grab the ridge pole with one hand and put in place; now it is made from discarded drill pipe and he has to strain to lift it from the ground. The same is true of the bolsters used for carrying tubular material. These often weight several hundred pounds and putting them in place or removing them from a truck or trailer is a man-size job.

Recognizing this accident hazard, T. A. Pickering, superintendent; T. L. Todd, foreman, and R. L. Vannaman, truck foreman, Odessa, Tex., district of Gulf Oil Corp., designed and built a special rack for hitching and unhitching trailers and loading and unloading bolsters. This rack (shown in upper photograph) allows the truck driver to handle the hitch end of the ridge pole and the bolsters without danger of injury.

The rack is built from tubular material and is high enough to permit a trailer to be backed under it. A pole parallel to the ground and normal to the main part of the rack projects far enough to extend over the tail board of the truck. A chain from this pole supports the ridge pole while it is being hooked or unhooked. On top of the main support is a pair of levers, one for each side of the bolster, which are used for lifting the bolster from the truck. The pins through the clevis and over the lever handle hold the bolster in the raised position. Details of the ridge-pole support and the bolster hanger are shown in the left-hand and the center right photos. The trailer is prevented from swinging around when disconnected due to the rear wheels resting in a rack.

At the lower right is shown the old method of removing a bolster from the truck or trailer. Note that the truck driver and his helper are both in position for a heavy lift and that considerable energy is required. Possibilities for a back injury are obvious.

Photographs courtesy of Gulf Safety News



CO$T Engineering

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

MANAGEMENT

OCTOBER 1, 1942

LARGE SAVINGS POSSIBLE BY REVAMPING PROCEDURE

PROGRESS is a continuous process and there is a necessity for constantly changing company-organizational plans and revising outmoded or obsolete methods. The most satisfactory arrangement for performing any task at the present time may be entirely unsuited to the conditions existing 10 years from now. For the most part the organizational method in use in the petroleum industry today was originated 10 to 20 years ago. Parts of this organization have ceased to have some of their original value and considerable money and time could be saved by adopting a new procedure.

The present arrangement for obtaining geological subsurface information is an outstanding example. Not many years ago there was a reluctance on the part of companies to give out information on a well. At the present time the geological information on practically any well is available to any legitimate operator. But the hangover from a less-cooperative period causes much duplication of effort and adds unnecessarily to the cost of subsurface geological work.

Free Men for Other Work

One of the standard arguments against any change is that it will result in the elimination of some of the members of a particular department from the payroll. Actually, this is not always the case as a revamping merely releases men for more important tasks which are neglected at the present time. Removing some of the unnecessary detail from company geological staffs would permit the geologists to spend more time looking for oil rather than at the detail incidental to the drilling of a particular test. With the present premium on manpower, this is vital to the interests of the oil companies and the nation as a whole.

When a wildcat, a pool extension, or an important field well is drilled, the company operating the property generally has a geologist "sitting" on it. He makes a complete study of the samples and picks the tops of the various formations. This information is passed on to the company's scouting department which in turn delivers it to the scout check for dissemination among the companies interested in the area. Each company then enters this information on well logs, contour maps, and on other pertinent records.

However, from time to time geologists and scouts from other companies visit the well to check on it. For instance, on a recent test drilled in the Mid-Continent, scouts from seven different companies visited the well three times a week, a total of 21 trips to the well. In another case, there were four geologists from different companies devoting the major share of their attention to one test being drilled. The official formation tops picked by each did not vary 5 ft. As a matter of fact, the tops were selected either by one individual or by the democratic method of voting.

After these wells were completed according to the regular course of business, washed and dried well cuttings were delivered to about 20 other operators interested in the area. Then 20 geologists, drawing $175 to $300 per month, spent from one-half to an entire day studying these samples under microscopes.

In some specific cases all of this duplicate checking may be necessary. Occasionally the geologist on the well may not be as competent as the companies might wish or he might have a few unorthodox views on geology. In such cases, a check by one or two other geologists should reveal any error and correct it.

The same condition extends to pool wells, where some companies continue extensive sample work and the detailed examination of cuttings at each 10-ft. interval. In a field so typical that the drillers call all important tops, one company with over 200 wells has a complete sample log of each well in addition to an electrical log. The latter log would provide sufficient information for practically any contingency in 90 per cent of the wells. The electrical-logging method has been widely adopted by some companies for eliminating the unnecessary sample work and they have found it entirely satisfactory.

Work Out Compromise

Each company has methods and procedures which it considers the best and compromising the different views would probably be difficult but not necessarily impossible. If a suitable form could be worked out, the log of the geologist for the company drilling the well could be reproduced in quantity and furnished to other companies interested. The original work could be checked by one other geologist from any of the companies interested in the area. Instead of sending individual sets of samples to each company, the company drilling the well could keep one set in its active files and another in the permanent files. At any later date the original work could be checked if any necessity existed or arose.

The same is true of scouting. The development of the integrated scouting arrangement with its conventional check meeting is a big improvement over the old "lone wolf" method wherein each company did all of its own information gathering. A further extension of the principle would permit scouts to devote more time to gathering other essential information instead of multiple-checking the information of the company drilling the well.

The accompanying article deals with one of the broad phases of the petroleum industry. It was written by one of the field geologists for a large oil company who has had first-hand experience in the matter.

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Engineering Fundamentals

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL No. 41

OCTOBER 1, 1942

HEAT LOSS FROM STEAM PIPES

HEAT-ENERGY losses in steam lines may be of considerable magnitude particularly if the lines are long, uninsulated, and carrying saturated steam. A study of Table 1 and the accompanying examples indicate the reduction in heat loss that may be effected through use of insulation on steam lines.

To determine heat loss from a line carrying saturated steam, the following measurements should be taken: (1) Quantity of steam flowing through line per unit of time; (2) steam pressure and quality at input end of line; (3) steam pressure and quality at outlet end of line.

The heat loss can be calculated by applying the following formula:

$$L_n = W(h_i + x_i H_i) - W(h_o + x_o H_o)$$

Where:

L_n = heat loss from line, B.t.u. per hr.
W = rate of steam flow through line, lb. per hr.
h_i = heat of the liquid at line inlet conditions, B.t.u. per lb. (From steam tables.)
x_i = quality of the steam at line inlet, a fraction. (Determined by use of a steam calorimeter.)
H_i = latent heat of vaporization at line inlet conditions, B.t.u. per lb. (From steam tables.)
h_o = heat of the liquid at line outlet conditions, B.t.u. per lb. (From steam tables.)
x_o = quality of the steam at line outlet, a fraction. (Determined by use of the steam calorimeter.)
H_o = latent heat of vaporization at line outlet conditions, B.t.u. per lb. (From steam tables.)

The use of this formula is illustrated in Example 1.

Table 1 is based on saturated steam at a pressure of 160 lb. per sq. in., abs., and an air temperature of 60° F. The heat loss for any other saturated steam pressure or any other air temperature can be calculated by use of the second figure (B.t.u. per lineal foot per hour per degree difference in temperature) given for each line size and each thickness of covering. Pressures over 160 lb. raise the temperature and cause a greater heat loss. Air temperature decrease from 60° would likewise cause a greater loss while an increase above 60° would reduce the temperature differential and the heat transfer. The method of calculation is illustrated in Example 2.

Example 1

Problem.—At a certain steam-driven rotary rig, the quality of the steam at the boiler is 99 per cent. The boiler pressure is 220 lb. per sq. in., abs. At the slush pumps the quality of the steam is 90 per cent and the steam pressure is 190 lb. per sq. in., abs. Steam is being consumed by the pumps at the rate of 6,500 lb. per hour. Calculate the loss of heat from the line between the boiler and pumps in B.t.u. per hour.

Solution.—From the pressure table of a set of steam tables, the following values can be obtained:

$h_i = 364.05$
$H_i = 835.8$
$h_o = 350.83$
$H_o = 847.2$

Then,

$$\begin{aligned} L_n &= 6{,}500\ (364.05 + 0.99 \times 835.8) \\ &\quad - 6{,}500\ (350.83 + 0.90 \times 847.2) \\ &= 6{,}500\ (364.05 + 827.4) - 6{,}500 \\ &\quad (350.83 + 762.5) \\ &= 6{,}500\ (1{,}191.45) - 6{,}500 \\ &\quad (1{,}113.33) \\ &= 7{,}744{,}425 - 7{,}236{,}645 \\ &= 507{,}780 \text{ B.t.u. per hour.} \end{aligned}$$

The equivalent of this loss in terms of boiler horsepower is,*

$$\frac{507{,}780}{33{,}475} = 15.17 \text{ boiler hp.}$$

Example 2

Problem.—What is the approximate heat loss, in B.t.u. per hour, that can be expected from a 4-in. steam line, 200 ft. long, when handling saturated steam at an average pressure of 200 lb. per sq. in., abs.? Average air temperature is 80° F.

1. If line is uninsulated.
2. If line has a 1-in. magnesia cover.

Solution:

1. From Table 1, the heat loss in B.t.u. per lineal foot per hour per degree of temperature difference is found to be 3.574 for an uninsulated 4-in. line.

The temperature of saturated steam at a pressure of 200 lb. per sq. in., abs., is 381.8° F. (From steam tables.)

The difference in temperature between the steam and the air is, then, (381.8 — 80), or 301.8° F.

So, the heat loss per lineal foot of pipe is 301.8 × 3.574, or 1,078.6 B.t.u. per hour.

Then, the loss from the entire line is 200 × 1,078.6, or 215,720 B.t.u. per hour.

2. The heat loss in B.t.u. per lineal foot per hour per degree of temperature difference, when using a 1-in. covering of insulation, is found from Table 1 to be 0.527.

So, for the insulated line, the heat loss for the line is 301.8 × 0.527 × 200, or 31,810 B.t.u. per hour.

It is interesting to note that use of insulation results in a saving of about 184 cu. ft. of 1,000-B.t.u. gas per hour, or a little over 4,400 cu. ft. per day.

*See Installment 33 for a discussion of boiler horsepower.

TABLE 1—HEAT LOSS FROM UNINSULATED STEAM PIPES

(Based on saturated steam at 160 lb. per sq. in., abs., and an air temperature of 60° F.)

Pipe diameter (in.)		Thickness of insulation, in. 0	½	¾	1	1¼	1½
2	B.t.u. per lineal ft. per hr.	597	149	118	99	86	76
	B.t.u. per lineal ft. per hr per degree difference in temperature	1.967	0.491	0.389	0.326	0.283	0.260
4	B.t.u. per lineal ft. per hr.	1085	247	193	160	139	123
	B.t.u. per lineal ft. per hr. per degree difference in temperature	3.574	0.814	0.636	0.527	0.458	0.405
6	B.t.u. per lineal ft. per hr.	1555	352	269	221	190	167
	B.t.u. per lineal ft. per hr. per degree difference in temperature	5.123	1.160	0.886	0.728	0.626	0.550
8	B.t.u. per lineal ft. per hr.	1994	443	337	276	235	207
	B.t.u. per lineal ft. per hr. per degree difference in temperature	6.569	1.459	1.110	0.909	0.774	0.682

This table is based upon the use of magnesia canvas-covered insulation.
Figures are adapted from data published by Babcock & Wilcox Co. in "Steam—Its Generation and Use," 1930.

Series prepared by Glenn M. Stearns, associate professor of petroleum engineering, University of Oklahoma

This Simple Test Shows Why the CONCAVE SIDE Cuts Belt Costs!

What Happens When a V-Belt Bends

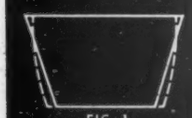

FIG. 1

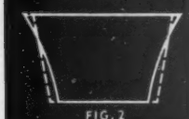

FIG. 2

If you care about belt costs, pick up any V-belt you have handy and make this simple test:—

Bend the V-belt while you grip its sides and you will feel how the belt changes shape. The top, under tension, narrows. The bottom widens. The sides of the belt bulge out. Clearly, if its sides were straight to begin with, the bent belt is forced into a shape that does not fit the sheave groove—as shown in figure 1, on the left.

Now, bend a V-belt built with the patented Concave side. You get the same shape change, but now the new shape exactly fits the sheave groove—as shown in figure 2. There is no side-bulge. Results? (1) Uniform side-wall wear—longer life! (2) The belt gets a full side-width grip on the pulley—carries heavier loads without slippage. This cuts belt costs and saves power.

Only belts built by Gates are built with the Concave side, which is a Gates patent.

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Journalog

A FEATURE OF THE OIL AND GAS JOURNAL — No. 17

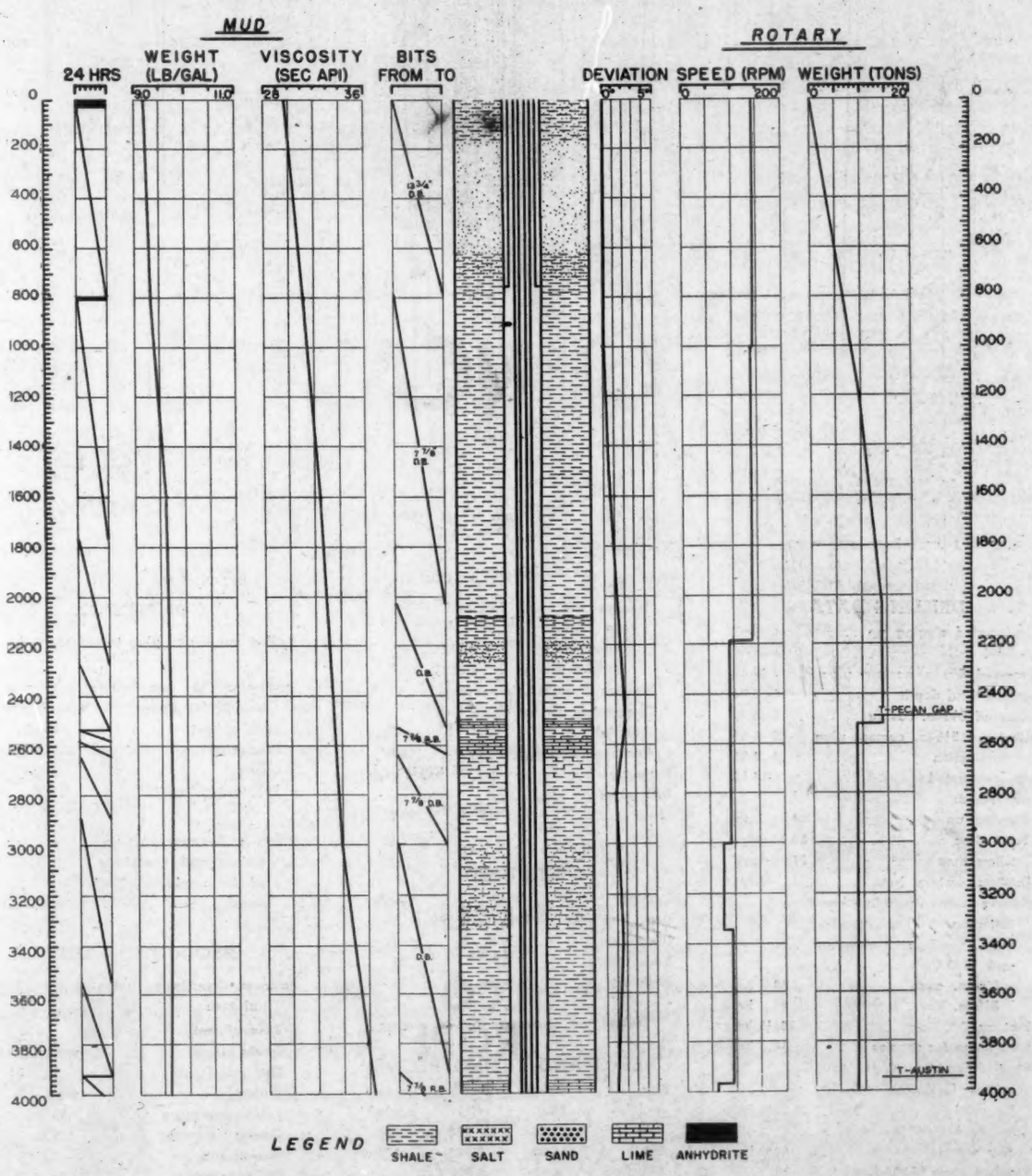
OCTOBER 1, 1942

AMERADA PETROLEUM CORP. 1 C. B. KENNEMER

660 ft. from west line and 660 ft. from south line of north 40 acres of 157.35-acre tract, Joseph Knight Survey, Woods County, Texas.
Derrick-floor elevation 453 ft.

CONTRACTOR
TWO STATES DRILLING CO.,
DALLAS, TEXAS

Discovery Well of Black Oak (Coke) Field, Wood County, Texas



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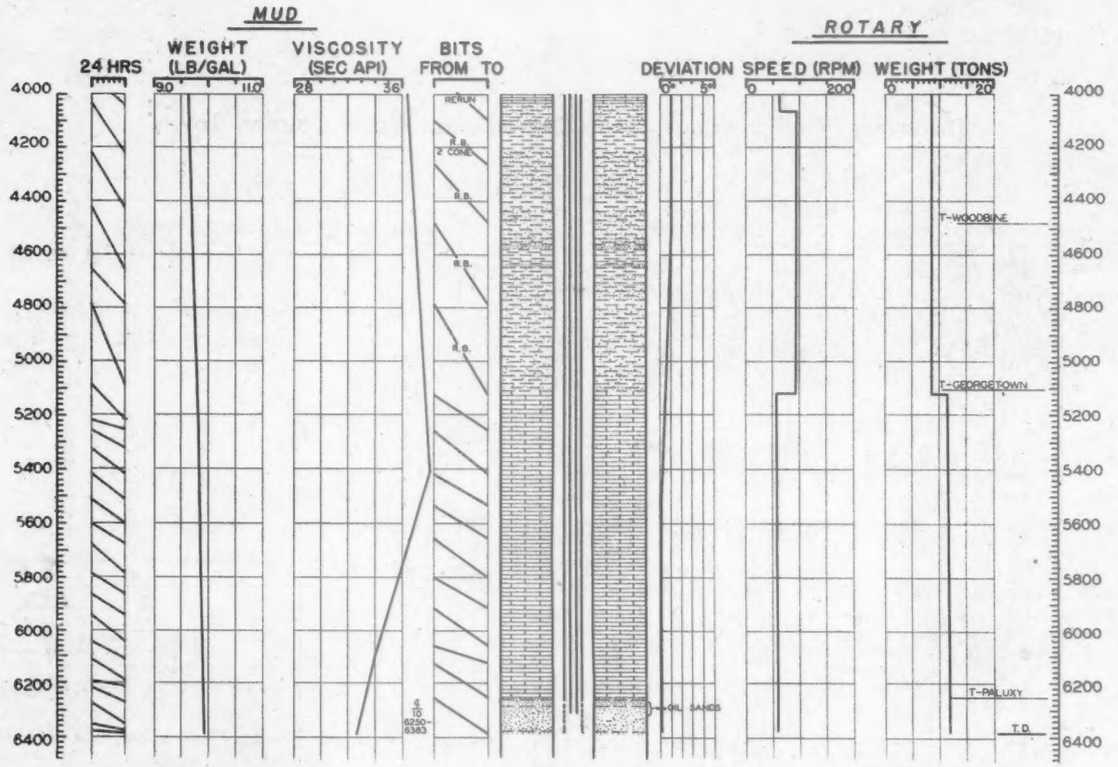
Journalog

OCTOBER 1, 1942

Discovery Well of Black Oak (Coke) Field, Wood County, Texas (Continued)



DRILLING DATA

Date started rigging up	4-22-42
Spudded	4-26-42
Cemented 9⅝-in. surface pipe	4-28-42
Reached total depth	6- 3-42
Cemented 5½-in. casing	6- 4-42
Drilled out 5½-in. cement plug	6- 6-42
First production	6- 8-42
Date completed	6-10-42
Time record:	
Rigging up	4 days
Total time	50.33 days
Drilling time	37.26 days
Drilling surface hole	1 day
Setting casing, including conditioning hole, running pipe, welding, cementing and W.O.C.:	
9⅝-in. csg.	48 hr.
5½-in. csg.	94 hr.
Fishing	104½ hr.
Shut down for repairs	46 hr.
Shut down for other difficulties (including 7½ hr. for rain)	16½ hr.
Core time (not included in day work)	84½ hr.
Number cores (6,250-6,383 ft.)	10
Number electrical log surveys	2
First run 6,352	
Second run 6,383	
Number straight-hole surveys	12
Completing and awaiting potential test	4 days
Average footage per day	126 ft.
Type rig	diesel rotary
Drill pipe:	
4-in.	788 ft.
3-in.	6,383 ft.

BITS USED

Type	Size	Number
Drag bits	13¾-in.	1
Drag bits	7⅞-in.	4
Rock bits	7⅞-in.	15
Rock bits	4¾-in.	*1

*Drilled out cement in 5½-in. casing.

CASING AND TUBING RECORD

Size (in.)	Weight (lb.)	Depth (ft.)	Cement (sacks)
9⅝	32.25	788	250
5½	15.00	6,379	175
2	4.70	6,306	

COMPLETION

Drilled out 5½-in. plug to 6,354 ft.

Perforated to test water shutoff (19 shots)	6,344-50 ft.
Time of test	4½ hr.
Production (oil)	236½ bbl.
Choke	1-in.
Tubing pressure, S.I.	300 lb.

Killed well, squeezed perforations and reperforated for production (247 shots) 6,262-6,344 ft.

PRODUCTION TEST

Railroad Commission potential test:

Time of test	4 hr.
Choke	open tubing
Oil	320 bbl.
Water	none
Tubing pressure	95 lb.
Casing pressure	225 lb.
Gas-oil ratio	107/1
Oil gravity	27.5° at 60° F.

REFINERY ACTIVITY AND EXPANSION

Price Compensation for Higher Output Of Fuel Oil Is Refiners' Main Problem

THE most pertinent problem currently facing petroleum refiners of the entire nation is that of price adjustments or war compensation for absorbing the reduced-product revenue accompanying operations directed at lower yield of gasoline and higher output of fuel oil. Refiners are pressing Washington authorities this week for action in a renewed drive to check the out-of-pocket drain on the manufacturing branch of the industry which is a direct result of cooperating in the war program. Much data have been presented to the Office of Price Administration on the maladjustment of ceiling prices with manufacturing objectives aimed chiefly at reducing the output of a 6-cent product while increasing the yield of oils quoted at 2 to 4.5 cents.

In reviving its study of ceiling prices, the OPA is considering whether to increase fuel oil in the Middle West where rationing is scheduled to start this month. A dual motive may be influencing OPA's consideration of higher fuel-oil prices in the Middle West. First, higher prices would provide moderate additional revenue to aid the position of refiners and second, a price penalty for the use of fuel oil in the area would encourage conversion to other fuels. Particularly, OPA is considering whether to allow increases in Middle West fuel-oil prices to correspond with the 1.5 cents per gallon remaining on top of quotations in the East Coast from the reductions prescribed August 5 when Reconstruction Finance Corp. began its transportation-cost subsidy.

The increase of 1.5 cents in the East Coast was left in effect to provide revenue to liquidate the $33,000,000 deficit in the petroleum industry transportation pool incurred before RFC agreed to absorb abnormal shipping costs. The price consideration is scheduled to remain in effect on the East Coast after the transportation deficit is liquidated to help defray the additional cost of the industry in concentrating its manufacturing operations on low-priced fuel.

OPA is also considering whether an increase in fuel-oil prices in the Middle West should be accompanied by reductions in gasoline quotations in order to hold the netback to refiners at approximately the prewar level. The Office of Petroleum Coordinator has campaigned for product-price adjustments in keeping with the changed refinery-operating conditions but representations have been consistently rejected by OPA. Refiners, OPC declares, have reduced gasoline production about 20 per cent in the last few months under its directive ordering such adjustments. The shift, OPC contends, merits compensation but so far the industry has been paying the costs out of pocket as a sort of patriotic service.

Another suggestion currently receiving consideration in Washington is that RFC should reimburse the refining industry for out-of-pocket costs resulting from the war just as it is absorbing the transportation deficits. Refiners are not particularly concerned whether the relief is granted by RFC or OPA but there is growing insistence

Sketches of Plant Operators . . .

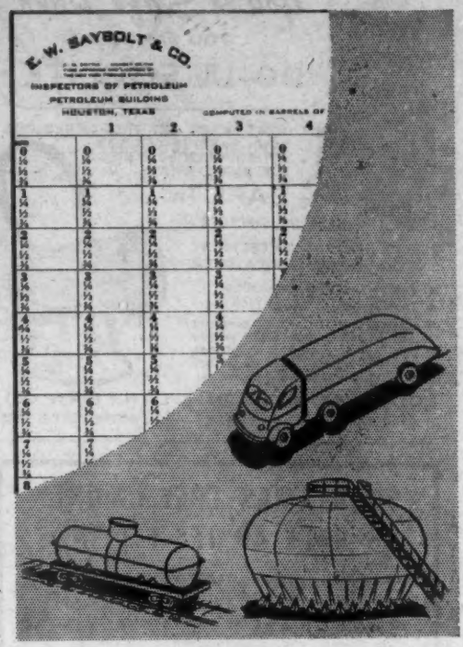
DR. W. J. McGILL, formerly general superintendent of the Standard Oil Co. (Indiana) refinery at Wood River, Ill., was promoted to general managership of that plant September 1, succeeding S. A. Montgomery.

Dr. McGill joined Standard of Indiana in 1923 as a member of the research department at Whiting, Ind. He had completed a long stay at the University of Michigan where he received B.S., M.S., and Ph. D. degrees. While at Whiting, he did important development work on insect sprays, the manufacture of low cold-test oils, the sweating of paraffin wax and the oxidation of wax.

In April 1928 he was transferred to Wood River where he became general foreman of the lubricating-oil plant and assistant general superintendent of the refinery. During the 4 years in which he served as head of the heavy-oils department at Wood River, he also acted as patent adviser for the plant. His promotion to assistant general superintendency at Wood River occurred September 16, 1932, and on November 1, 1934, he was promoted to general superintendent. He continued in that position until his recent elevation to the position of manager.

In connection with his earlier work at Wood River, Dr. McGill developed several methods and devices which are now used by the company under patents he perfected.

Dr. McGill is married, has two children and resides at Alton, Ill.



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that some provision be made to stop the financial drain on the industry which, manufacturing leaders assert, is nearing the intolerance point.

According to OPA spokesmen, the agency is considering "several" different proposals as to fuel-oil prices. No details are available.

Subcommittees of the Petroleum Industry War Council, which have been according intensive study to the cost-recovery question, report conclusive evidence that relief is justified. The council appears to feel the price administration may move on fuel-oil prices by districts, possibly by companies in response to individual cost increase showings, rather than in any general amendment to Price Schedule 88.

In considering the cost of changing refinery yields, OPA will base action in part on questionnaires sent out 30 days ago to the industry asking definite figures on the increased cost of lessened realization. All these have not been returned.

●

E. A. Metcalf Made Manager of Neodesha, Kans., Refinery

CHICAGO, Ill.—Appointment of E. A. Metcalf as manager of the Neodesha, Kans., refinery of Standard Oil Co. of Indiana was announced last week by Edward G. Seubert, president of the company.

Mr. Metcalf began work at the refinery when it was part of the Standard Oil Co. (Kansas). When the Kansas company sold the property to Standard of Indiana he was continued as superintendent, in which position he remained until April 20, 1942, when he became acting manager.

Harold R. Snow, who was formerly manager of the Neodesha unit, has accepted a position as assistant general superintendent of Pan American Refining Co.'s big refinery at Texas City, Tex., after several months of special work on a butadiene project.

H. G. Schnetzler succeeds Mr. Metcalf as superintendent at Neodesha and at the same time continues to be chief chemist. Mr. Schnetzler began his career with Standard of Indiana in 1924 as a chemist. In 1932 he was transferred to Neodesha. On May 1, 1938, he was made chief chemist, and on April 20, 1942, he became acting superintendent also.

Refiners Protest Proposed Tinsley Crude Rate Increase

Briefs are due October 22 to support protests of refiners to a proposed increase in the freight rates on Tinsley, Miss., crude to central destinations. Refiners voiced their opposition at an Interstate Commerce Commission hearing in Chicago, Ill., last week.

Brown L. Meece of Globe Oil & Refining Co., which moves considerable Tinsley crude to its Lemont, Ill., refinery, said refiners could not absorb the additional cost, which he estimated at 10 cents a barrel.

The rails, in seeking to establish an alternate rate of 23 cents per 100 lb. for 8,000-gal. cars to the present rate of 20 cents for 10,000-gal. cars, had contended the change was a move to adjust operations to wartime conditions and improve efficiency.

Refinery Technical Men in Oklahoma-Kansas Organized

Under the sponsorship of the Western Petroleum Refiners Association, technical men employed by refiners in Oklahoma, Kansas and Missouri will meet once a month to discuss their problems.

Last Thursday the group heard Lt. Col. Arthur H. Dennison, plant protection officer, say that saboteurs are less likely to infest the oil industry generally but that plants must be protected against them. He said that it was for the individual companies to decide just how this will be accomplished. He mentioned the use of trained dogs to locate strangers in the plant.

W. K. Holmes, manager of Texas Co.'s West Tulsa refinery, acted as chairman for the September 24 meeting and when the discussion of plant guards arose, he said his company had found the employment of an international detective agency to handle such problems to be effective and logical.

About 100 refinery men attended the special meeting.

Bureau of Mines Forecasts 17 Per Cent Reduction in Demand for Motor Fuel

Total demand for motor fuel in October, the Bureau of Mines forecast last week, will be 50,700,000 bbl., 17 per cent less than the actual requirements for this month last year.

Direct sales of natural gasoline are estimated at 1,600,000 bbl., making an indicated refinery production of 47,900,000 bbl., distributed among the various refining districts as follows: East Coast, inland Texas, Texas Gulf Coast, Louisiana Gulf Coast and inland Louisiana-Arkansas, 21,300,000; Appalachian, 1,900,000; Indiana, Illinois, Kentucky, etc., 10,850,000; Oklahoma, 2,430,000; Kansas, 2,870,000; Rocky Mountains, 1,340,000; California, 7,210,000 bbl.

Natural gasoline to be blended at refineries, the bureau calculates, will total 4,540,000 bbl. The yield of gasoline from crude oil is estimated at 38.3 per cent. This yield, applied to the straight-run and cracked-gasoline production of 43,360,000 bbl., gives total crude runs of 113,200,000 bbl., or 3,651,000 bbl. daily.

SUMMARY OF FORECASTS FOR OCTOBER 1942
(Thousands of barrels)

	Forecast Oct. 1942	Forecast Sept. 1942	Actual Oct. 1941
Motor-fuel demand	50,700	51,400	60,927
Supply of motor fuel:			
Straightrun and cracked	43,360	42,030	56,040
Natural used at refineries	4,540	4,270	4,997
Total refinery prod.	47,900	46,300	61,037
Other natural gasoline	1,600	1,500	1,754
Imports			73
Increase in finished stocks			1,937
Decrease in finished stocks	1,200	3,600	
Available supply	50,700	51,400	60,927
Crude-oil requirements:			
Per cent of gasoline	38.30	38.70	44.21
Refinery crude required	113,200	108,600	126,772
Daily average	3,652	3,620	4,089
Domestic crude runs	112,800	108,000	121,792
Exports and fuel losses	6,400	6,600	6,861
Total demand for domestic crude	119,200	114,600	128,653
Daily average	3,845	3,820	4,150
Decrease in domestic stocks			2,508
Actual production			126,145
Daily average			4,069

British-American Refinery

TORONTO, Ont.—British-American Oil Co. has issued $3,000,000 debentures to finance completion of its new refinery at Clarkson, near Toronto, and to defray cost of new construction at other plants throughout Canada necessitated by war requirements.

Pipe-Line Activity

Hope Revives Plans for 1,000-Mile Pipe Line

Construction of a $42,000,000 pipe line, stretching 1,000 miles into Louisiana and Texas, is being planned by the Hope Natural Gas Co. of West Virginia to alleviate a predicted shortage of natural gas in the Appalachian industrial area. L. L. Tonkin, Hope president and general manager, disclosed last week. A similar project was scheduled for construction early this year but was stopped by inability to obtain federal permits due to war conditions.

Mr. Tonkin said his company, a subsidiary of the Standard Oil Co. (New Jersey), is preparing applications for approval and priorities on materials to build the line, which would connect with the Hope system in West Virginia at the Kentucky border.

He declined to say when the applications would be presented to the War Production Board.

The 20-in. line would carry about 285,000,000 cu. ft. of natural gas per day into West Virginia for distribution into the steel districts of northwestern Ohio, northern West Virginia and western Pennsylvania. Mr. Tonkin estimated it would require 10 months to build the line.

Financing of the big project would be done by Hope alone, he added.

It would be the first natural gas pipe line connecting the Appalachian area with fields in Texas and Louisiana.

Correction to Norton Article

In the Annual Pipe Line Number, September 24, 1942, a statement appeared on Page 170 in the article entitled, "New Practices Improve Crude and Products Line Operation," by John G. Norton, chief mechanical engineer, Magnolia Pipe Line Co. The incorrect statement read: "If these scrapers are properly used (and this is a simple matter) we would not be hearing it said that this line or that line has a '*C* factor of 100-200.' If a line will not give *C* factors higher than that there is something wrong with that line." Owing to a typographical error the figures should have appeared as "*C* factor of 100 to 120."

Pipe Is Removed to Serve Army Camps

The last 25 miles of a 125-mile 12-in. pipe line which formerly connected the Big Lake oil and gas pool in Reagan County, Texas, is to be used to serve Army camps. This pipe is being moved to new locations. The first 100 miles of the line had been taken up last year.

The pipe line originally carried gas to the West Texas Utilities plant here and the Pecos Valley Power & Light Co. plant on the Pecos River near Girvin, Tex.

West Texas-California Line Is Recommended

Recommendation that one of the three pipe lines running from West Texas to the Gulf Coast be dismantled and the pipe relaid from West Texas to California to meet a shortage of oil in that area was made last week by E. O. Thompson, chairman of the Texas Railroad Commission.

Colonel Thompson said reports indicated California production was approximately 50,000 bbl. per week less than the figure recommended by the Office of Petroleum Coordinator and that Texas appeared to be the only area capable of supplying the demand.

"We should look ahead and re-lay this line to provide a greater outlet to the West Coast," Colonel Thompson said.

"As the war effort grows, Pacific Coast needs for crude will increase. At present, West Texas lacks a sufficient outlet for its crude. By the time the line could be placed in operation there would be a demand for the oil."

Root Petroleum Extends Line to New London Pool

The Root Petroleum Co. is building a 4-in. pipe line to serve the New London oil field in the southeastern part of Union County, Arkansas.

The new line will be an extension of the present Root line serving the Urbana field in Arkansas. Work has been started on the project and it is expected that it will be completed at an early date. The present line runs from the Urbana field to the Root refinery near El Dorado, Ark.

The New London field, newest Union County pool, now has five producers. Oil from the area has been moved by truck from the field to Urbana.

Eastern Pipe-Line Deliveries In August Decline Slightly

Deliveries of crude oil through eastern pipe lines declined 6 per cent in August from July, but were up 12 per cent compared with August 1941. For the first 8 months of this year, the movement was at a record, a gain of 28 per cent being shown against the similar period a year ago.

For the nine lines formerly in the Standard eastern group, deliveries in August aggregated 29.8 million barrels against 31.7 (the record) in July. The reduction was due in part to a declining trend in Illinois crude-oil production.

All lines showed reductions in August against the preceding month except Eureka.

A total of 226.3 million barrels was delivered through the nine lines in the first 8 months of this year against 177.4 million in the similar 1941 period.

In the accompanying tabulation is shown deliveries of these lines for August and for the 8 months with comparisons against similar periods in 1941, in thousands of barrels:

	August		Eight mos.	
	1942	1941	1942	1941
Buckeye	10,935	9,905	80,645	63,601
Eureka	1,103	869	7,911	6,965
Illinois	8,679	8,959	65,992	49,669
Indiana	2,941	1,912	21,930	16,357
Natl. Transit	1,721	1,608	13,704	11,919
N. Y. Transit	841	883	8,208	6,352
Northern	1,349	1,205	11,572	8,150
Southern	824	717	6,185	5,248
S. W. Pa.	1,416	1,199	10,208	9,238
Total	29,809	26,557	226,355	177,499
Daily average	961	857	931	730

Latex Will Be Inactive During War Period

Lawrence H. Favrot, president of the Latex Construction Co., Houston, Tex., received a commission in the U. S. Army Engineers Corps and will report for active duty October 6. Mr. Favrot announced that Latex Construction Co. will be dormant for the duration of the war and that the company's personnel and equipment will be employed by J. W. Sharman and Earl Allen who have formed a partnership for the purpose of pipe-line construction work which will be known as Sharman & Allen. Both Mr. Sharman and Mr. Allen are vice presidents of Latex Construction Co.; they have had wide experience in pipe-line construction, having served as superintendents for the Latex company for several years. Mr. Favrot follows George A. Peterkin, vice president of the company, into the armed forces. Mr. Peterkin recently received a commission in the Army air force, and he is now on active duty.

Pipe-Line Personalities . . . . . J. A. Neath

J. A. NEATH, director of the Humble Oil & Refining Co., retains all the interest in pipe-line operations assimilated in his 23 years of association with the Humble Pipe Line Co. Recently, Mr. Neath headed a subcommittee of the District 3 transportation group to analyze the practicability and feasibility of building a pipe line from Corpus Christi to Beaumont, Tex.

Mr. Neath has been associated with Humble company operations since 1919 when the old Southern Pipe Line Co. became a part of the Humble Pipe Line Co. Earlier, he was associated with other pipe-line companies operating in the West Central Texas district.

During his early career with the Humble Pipe Line Co., Mr. Neath was stationed at Cisco, Tex. In 1924, he was appointed general superintendent of the Humble company's pipe-line operations and was transferred to Houston, Tex. The following year he was made a director of the pipe-line company and was made vice president in 1928, a position he held until promoted to the board of the parent company during the early part of this year.

During the years in which Mr. Neath was a top executive with the pipe-line company, Humble's system was expanded substantially, including construction of crude-oil trunks from West Texas, New Mexico and East Texas to the Gulf Coast. Normally, Humble Pipe Line Co. is the largest transporter of oil in Texas, handling about 150,000,000 bbl. of crude annually. He was born at Red Rock, Pa., November 17, 1896. He is married and has two sons; Robert, 22, is a mechanical engineering student at Rice Institute and Jack, 13, is attending Kinkaid School.

Mr. Neath, who is known to his many friends as "Jap" is an ardent sportsman and active civic worker. He has been active in Community Chest drives for many years and headed the campaign 3 years ago to raise funds for the new St. Thomas High School. He is a past president of the River Oaks Country Club, Houston, Tex.

CEMENTED *without a hitch!*

CEMENTING on one of the best producing wells in the Neale Field, Louisiana, went through without a hitch. Here is the history:

Total depth 11,780'. To cement the 5½" O. D. casing in an 8⅝" hole, 1200 sacks of *improved* Unaflo cement were used at 16.5 lb. per gal. Mixing and placing took 97 minutes. Bottom hole temperature 240°F. Pump pressure 1600 lb.

The superintendent states, "Cementing went along beautifully, and well is an excellent producer."

Unaflo, the original retarded oil-well cement, has made enviable records on all kinds of jobs. *Improved* Unaflo, the result of constant research in the laboratory, in the plant, and in the field, is better still. It is more uniform in composition, more uniform in reaction to different mixing waters found on different jobs, more uniform in retardation of setting time at different hole temperatures. With *improved* Unaflo, the stiffening of slurry is not merely "slow." It is delayed, postponed, *retarded.* Thus it does not congeal, but remains fluid and pumpable for the entire period of retardation, after which it hardens normally.

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CC-U-28

FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

Devonian production in Illinois may again boost the state's output enough to cause a little optimism about the East Coast oil supply situation. This formation, condemned by those who have not been so fortunate when seeking the pay in it, and highly praised by others, was the principal cause of the state's total output reaching 500,000 bbl. daily in 1940.

The most recent discovery of Devonian production in the Boulder pool in Clinton County gives indications that it may result in a large flush production. The Devonian discovery, E. Frank Jones 2 Harrison, SW 2-2n-2w, is not yet completed, but it was reported making 452 bbl. in 24 hours from a depth of 2,667 ft. The well came in flowing after 7 ft. of pay had been drilled.

The well is on the same property as the Benoist discovery but it strangely enough is not the first production obtained from the Devonian in the pool, Texas Co. having obtained a head of oil, followed by better than 19,000,000 cu. ft. of gas on its 1 Price Gray in 35-3n-2w.

The pay in the new Devonian pool may approach that of Salem and Centralia. The former had 30 ft. of pay zone and the latter 8 ft. (these are averages for all wells in the respective fields). The Devonian in Centralia was particularly rich in the north end of the field and the state's largest producer is credited to that area.

At the present time the Boulder pool's productive limits as shown by the Benoist wells is approximately a square mile. Just how much of this will be productive in the Devonian is not yet known but generally the Devonian pay corresponds fairly well with the younger Chester pay horizons.

It is worth noting that the new discovery is in the area from which all of the state's Devonian production has been discovered. Sandoval, Bartelso, McKinley, and Irvington in addition to Centralia and Salem are all within a comparatively short distance. Only other recent production from the Devonian in Illinois is at Louden.

The recent lifting of the ban on 40-acre spacing in the state affected only the wells producing from the sand horizons and any development in the field will need to be on the wide spacing. However, the drilling of 24 Devonian wells into a rich pay streak could easily result in a total initial amounting to thousands of barrels daily. Where the Devonian is as prolific as it was at Salem and Centralia, it is extremely porous and the drainage area of a single well is exceedingly large. One advantage to be gained from the 40-acre spacing is the increase in the high-output period of the wells. Consequently, if an immediate drilling program is inaugurated, the state's output may be up for the balance of the year.

NORTH TEXAS: Deep zones in the Fort Worth basin in Montague County have paid off again with a new pool from the Simpson or Ellenburger. Casing has been set to test a wildcat in southwestern Jack County which shows promise of opening a new pool (p. 62).

SOUTHWEST TEXAS: A test near Vickers in Atascosa County showed 614 ft. of 39-gravity oil on a drill-stem test of the Edwards lime and has buoyed hopes of uncovering Lower Cretaceous production in the area. The North Pettus field has been opened in Bee County and shallow sand production has been found in the La Gloria field (p. 59).

LOUISIANA GULF COAST: Gulf's Bayou Couba prospect in St. Charles Parish has paid off flowing 372 bbl. daily through 3/16-in. choke. A test in Iberville Parish caught fire for the second time last week and was extinguished while a Leeville well blew out from a depth of 5,200 ft. and caught fire and cratered (p. 61).

ILLINOIS: A test in the Boulder pool, Clinton County, is reported to be flowing from the Devonian lime at the rate of 1,000-5,000 bbl. daily and promises to be one of the best discoveries of the year. A Jefferson County well south of the State Game Farm is being completed to open a new field from the Aux Vases and Levias (p. 63).

CALIFORNIA: The mayor of Los Angeles has conditionally vetoed Shell Oil Co., Inc.'s indoor drilling project on Gilmore Island. Two old wells in the East Coalinga field have been returned to production and preparations are under way to test an outpost of the Paloma field (p. 60).

MICHIGAN: State supervisor of wells has asked that spacing restrictions in six southwestern counties be lifted so that operators can set up a 20-acre spacing pattern that can later be converted to 10-acre locations. Permission has been granted to drill two wells (one each to two different horizons) to 40 acres in the Reed City field (p. 64).

MONTANA: A new field of undetermined size has been opened in Pondera County by a small producer in the Sunburst sand. Development is going ahead under new unit agreements in the Bowdoin gas field, resulting in five completions during the past week (p. 64).

COLORADO: The first well drilled to the Embar-Tensleep horizon in the Grass Creek field since 1935 was completed last week. It was an outside well and proves up several hundred acres at the south end of the field (p. 64).

TEXAS GULF COAST: A new pool has been opened in Montgomery County which may be a 3-mile extension to the Lake Creek field. The second producer in the 7,709-ft. sand is indicated in North Bay City pool and the Ganado and Harmon pools in Jackson County may be connected by an outpost well (p. 61).

EAST TEXAS: The Smackover lime appears to be condemned as a source of oil in the Talco fault-line field where a well drilled to that formation recovered only salt and sulfur water on a drill-stem test (p. 58).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended September 26, 1942)

	Oil	Gas	Dry	Total	Footage	Ttl. comp. to date 1942	Ttl. comp. to date 1941
N. Y., Pa., and W. Va.	42	15	4	61	89,847	2,615	4,367
Ohio	7	8	13	28	62,391	842	1,226
Indiana	1	0	4	5	8,363	261	369
Kentucky	0	3	0	3	8,448	213	486
Illinois	17	1	20	38	85,105	1,331	2,644
Michigan	6	1	10	17	40,829	537	651
Kansas	14	0	10	24	77,017	1,186	1,636
Nebraska	1	0	2	3	8,669	29	72
Missouri, Iowa	0	0	0	0	0	10	28
Oklahoma	9	1	12	22	80,639	910	1,411
Texas:							
North Central Texas	8	0	10	18	54,484	882	2,111
West Texas	12	1	3	16	62,510	1,055	1,669
Texas Panhandle	2	0	1	3	9,657	291	485
Eastern Texas	8	1	3	12	59,037	308	798
Texas Gulf Coast	8	0	1	9	56,973	557	819
Southwest Texas	4	0	9	13	54,631	828	1,372
Total Texas	42	2	27	71	297,292	3,921	7,254
North Louisiana	4	0	4	8	38,725	366	538
Louisiana Gulf Coast	7	0	2	9	82,928	394	655
Total Louisiana	11	0	6	17	121,653	760	1,193
Arkansas	3	0	2	5	28,846	137	137
Mississippi and Southeast	1	0	4	5	20,658	61	193
Montana	2	8	2	12	13,851	151	211
Wyoming	2	0	0	2	9,850	80	144
Colorado, Utah	0	0	1	1	1,845	15	25
New Mexico	9	0	0	9	29,346	204	211
California	10	0	6	16	63,910	553	825
Total United States	177	39	123	339	1,048,559	13,816	23,083
Total previous week	195	48	113	356			
Week ended Sept. 27, 1941	469	58	160	687			

PERMIAN BASIN, PANHANDLE

Andrews County Embar Pool To Get Ellenburger Test

By ROBERT INGRAM

MIDLAND, Tex.—Assured as a pool opener last week was Texas 1 J. Bay Robertson, NW SE Section 25, Block A-21, P.S.L. Survey, in southern Gaines County, 2¾ miles west and slightly north of Landreth 1 Kirk, small pumper of the one-well Kirk pool. Pay was coming from perforations in 5½-in. casing opposite the Permian lime at 5,910-50 ft.

Previous week the well was showing for a discovery when it swabbed 65 bbl. of fluid in 11 hours. Operators worked throughout last week increasing the pay and at the week's end were waiting on pumping equipment to complete. Late swabbing tests indicated it might pump about 75 bbl. to 100 bbl. daily plus a little salt water.

Acid was used twice during the testing. First time it was treated with 6,000 gal. through the perforations. After this treatment it swabbed 82 bbl. of oil in 9 hours, 9 per cent water, and in the next 11 hours swabbed 88 bbl. of oil, only 5 per cent water. Second treatment was with 10,000 gal., and after a 24-hour shutdown to change lines it swabbed 206 bbl. in 22 hours, about 4 per cent water.

The one-well Kirk pool, nearest production, was opened in September 1936 to Permian lime production at 4,703-4,850 ft.

Meantime, in northwestern Gaines County, Shell Oil Co., Inc. 1 Leaverton, SW SE Section 459, Block D, C.C.S.D.&R.G.N.G. Survey, 7,500-ft. wildcat 4 miles southwest of the Wasson field, was coring at 5,033 ft. in lime showing slight porosity and bleeding in spots. Cores had been recovered showing oil (odor and bleeding) beginning at 4,930 ft.

Embar Outpost Deepens

Stanolind Oil & Gas Co. 1-W University, Section 19, Block 10, University Survey, 1-mile-northwest outpost to the Embar Ordovician pool in southern Andrews County, drilled past contract depth of 8,300 ft. and was headed for the Ellenburger, expected at around 8,500 ft. Early in the week there were reports that the test might be abandoned because of the thick Simpson section. Simpson was topped at 7,920 ft., 4,646 ft. below sea level, and at the contract depth still was being drilled, making at least 420 ft. of Simpson in the hole.

The test was shut down for a day at 8,300 ft., then drilling was resumed to 8,323 ft. in lime where it was again delayed, this time by lost bit bearing.

Also in the Embar district was Phillips Petroleum Co. 12 University-Andrews, Section 24, Block 11, ¾ mile northwest of production, which had 4 ft. of dolomite with a slight show in the bottom of a core from 8,124-37 ft. It was to take a drill-stem test. Phillips Nos. 9, 10, 13 and 21 were also nearing the pay zone.

NORTHERN WEST TEXAS COMPLETIONS

Fields

Dean, Cochran County: Continental 8-58 Dean, Lge. 58, Martin C.S.L. Sur., flowed 1,209 bbl. through 3-in. casing outlet after acid, T.D. 4,997 ft.

Fullerton, Andrews County: Fullerton Oil 1-B Wilson, NE NE Sec. 20, Blk. A-37, P.S.L. Sur., flowed 909 bbl. through 1-in. tubing choke after acid, T.D. 7,300 ft.

Slaughter, Cochran County: Anderson-Prichard 7 Neal, Lge. 57, Refugio C.S.L. Sur., flowed 508 bbl. through casing after shot and acid, T.D. 4,995 ft.

Slaughter, Hockley County: George P. Livermore 2 Owens, NE NE Lab. 98, Lge. 38, Zavalla C.S.L. Sur., flowed 306 bbl. after acid, T.D. 5,020 ft.

Wasson, Gaines County: Mabee 1-40 W. N. Willard, NW NW Sec. 40, Blk. AX, P.S.L. Sur., flowed 620 bbl. through 1⅛-in. tubing choke, T.D. 4,995 ft.

West Andrews, Andrews County: Atlantic 2-A University, NE NW Sec. 12, Blk. 11, University Sur., potential 95 bbl. oil and 2 bbl. water through 1-in. tubing choke after shot, T.D. 4,380 ft.

Kewanee Oil & Gas 1 University, SW NE Sec. 12, Blk. 11, Univ. Sur., flowed 464 bbl. through ½-in. tubing choke after shot, T.D. 4,435 ft.

West Fuhrman, Andrews County: N. G. Penrose 1-A University (was Henry A. Roach 1 Humble-University), SE SE Sec. 3, Blk. 10, Univ. Sur., flowed 122 bbl. natural through ⅛-in. tubing choke, T.D. 4,630 ft.

Delaware Sand Discovery Running Pipe to Test

Casing was being run for a test of a show believed to be from the Delaware sand at Magnolia Petroleum Co. 1 Robertson, Section 16, Block 142, T.&St.L. Survey, 13 miles north of Fort Stockton and 10 miles west of the Heiner Ordovician pool of northern Pecos County. Seven-inch pipe was cemented at 6,475 ft., with total depth 6,561 ft. in sand and shale.

The well had shows reported the previous week and, after electrical log was run, operator indicated that the prospects for production were just good enough to warrant a thorough test. Should it fail to pay off, it may be deepened to the Bone Springs.

The 1 Robertson was the second important development in the Delaware basin, which lies west of the Permian basin, this year. First in the area, relatively unexplored because of its remoteness from eastern and Gulf Coast marketing points, was the discovery of the Chancellor field by Pure Oil Co. also in Pecos County.

Here Pure 1 Odneal, Section 42, Block 49, Township 10, T.&P. Survey, south offset to the discovery Delaware sand producer, was drilling at 4,253 ft. in anhydrite with about 1,000 ft. more to go to reach the pay level. The Delaware sand pay in the first well and the Castile sand pay in the second well are at approximately the same depth. Crude from the two wells in the field is being hauled by truck a distance of about 45 airline miles to Texas-New Mexico pipe-line station at Abell City.

Walker Pool Extended West

The Walker pool in Pecos County was extended ½ mile west and a little north by Cardinal Oil Co. 1-E University, NE SW Section 13, Block 11, University Survey. The well was completed flowing 90 bbl. of 31.5-gravity oil in 24 hours from pay topped at 1,875 ft. after shot with 50 qt. Gas-oil ratio was 450:1. Cardinal will move the rig from No. 1-E 1,366 ft. north for No. 2-E where cellar and pits have already been dug.

Another Completion in Sand Hills Link

Completion was near for Gulf Oil Corp. 7-B

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EASTERN TEXAS

Smackover Lime Dry in Talco Fault-Line Field

By ROBERT INGRAM

DALLAS, Tex. — Smackover lime appeared to be condemned last week as a possible source of oil and gas production at one of the most favored spots along the Balcones fault system trend —the big Talco fault-line field. Test of the lime was made by J. B. White et al 1 Jackson, Hopkins Survey, on the north side of the field in Franklin County.

The wildcat had been closely watched for nearly 2 weeks when it finally reached a tentative top of the Smackover at 8,583 ft., drilled to 8,605 ft. and recovered 1,100 ft. of salt and sulfur water in 10 minutes on a drill-stem test at 8,588-8,605 ft. In spite of the failure, operators were drilling ahead at the week's end at 8,650 ft. to fill the contract calling for a hole 200 ft. into the Smackover.

The lime topped at 8,583 ft. was of a brownish color, which was said to be the natural color of the Smackover. It was picked from a core cut at 8,579-85 ft., the bottom 2 ft. of which had a good stain and odor of oil. Core from 8,585 ft. to 8,605 ft. returned 7 ft. of oolitic lime, somewhat porous, with gas odor and some sulfur odor. No free oil or oil saturation was noted.

As in all Smackover tests in East Texas, detailed study will be made of samples and electrical log to add to scanty information available on that horizon.

Results of this test left only the P. D. Bowlen 1 Simms, Williams Survey, just east of Simms in Bowie County, the only current Smackover test in the district. It was drilling again at 5,300 ft. in shale after cleaning up a fishing job at 5,170 ft.

Wildcat Progress

Magnolia Petroleum Co. 1 Braly, Josiah Thomas Survey, Mixon area, topped the Paluxy section at 6,010 ft., the Glen Rose at 6,300 ft., and the first anhydrite stringer at 7,080 ft. and was drilling at 7,210 ft. in shale. . . . Humble Oil & Refining Co. 1 Curtis, John Vaughn Survey, pool opener on the Larissa-Bullard structure of northwest Cherokee County, flowed only 10 bbl. of oil on the last 7-hour test through ¾-in. tubing choke from Pettit lime at 10,160-10,212 ft., plugged-back total depth 10,460 ft. . . . Sinclair Prairie 1 Swinney, Chapel Hill outpost, flowed 98.24 bbl. of oil in 24 hours on gas lift at latest test.

EAST TEXAS COMPLETIONS

Wildcats

Houston County: M.G.M. Oil 1 Lundy, J. Forbes Sur., 1¾ mi. SE of Lovelady, dry, sand 3,228-50 ft. by electrical log, T.D. 3,821 ft.

Fields

Coke, Wood County: Amerada 1-A Darby, Berry Smith Sur., flowed 93.5 bbl. in 6 hr. through ¼-in. tubing choke, T.D. 6,357 ft.

Amerada 1-B Darby, M. Y'Barbo Sur., flowed 132 bbl. in 6 hr. through ¼-in. tubing choke, T.D. 6,342 ft.

Amerada 2 E. L. Faulk, James Knight Sur., flowed 110.75 bbl. in 6 hr. through ¼-in. tubing choke, 5½-in. 6,371 ft., T.D. 6,372 ft.

Amerada 5 C. B. Kennemer, M. Y'Barbo Sur., flowed 132 bbl. in 6 hr. through ¼-in. tubing choke, T.D. 6,359 ft.

Amerada 1 Robertson, M. Y'Barbo Sur., flowed 124 bbl. in 6 hr. through ¼-in. choke, T.D. 6,375 ft.

Hawkins, Wood County: E. B. Germany 1-B C.W.B. Missions, W. Butch Sur., flowed 83.19 bbl. in 8 hr. through ¼-in. choke, perf. 4,733-4,838 ft., T.D. 4,862 ft.

Humble 1-C E. M. Slaughter, M. A. Esparcia Sur., flowed 94.48 bbl. in 6 hr. through ¼-in. choke, T.D. 4,907 ft.

Talco, Titus County: A. M. White et al 1 Lillianstern, Spell Brown Sur., dry, T.D. 1,565 ft.

Welland, Hunt County: Grelling & Hugus 1-A G. Graham, C. Hart Sur., flowed 215 bbl. through ¼-in. choke, T.D. 2,803 ft.

Ira L. McMahon et al 1 Winniford, James McKinley Sur., dry, T.D. 3,140 ft.

EAST TEXAS BORDER COMPLETIONS

Harrison County: Arkansas Louisiana Gas 1 Jeneve, J. B. Bryant Sur., O'Banion unit, est. 45,000,000 cu. ft. gas and spray distillate, T.D. 6,134 ft.

SOUTHWEST TEXAS

Deep Edwards Lime Showing In Atascosa County Wildcat

By F. L. SINGLETON

CORPUS CHRISTI, Tex.—As deeper exploration in the Southwest Texas district becomes more general, it becomes apparent that a vast amount of new reserves remain to be uncovered by this phase of operation. For the past several months interest in the district has been directed toward the Wilcox trend and the results of exploration have been most encouraging. During the past week a new type of play was believed to be in the making with the possible discovery of deep Edwards lime production in Atascosa County where a wildcat was being prepared for testing following the recovery of pipe-line oil on a drill-stem test.

The possible discovery is Humble 1 M. L. Thompson, located in the Peter MacGreal Survey, 1½ miles southwest of the town of Vickers. With the hole bottomed at 7,579 ft., 5½-in. casing was cemented at 7,563 ft., preparatory to testing the Edwards lime at 7,569-79 ft., where a 40-minute drill-stem test recovered 614 ft. of 39-gravity oil and 40 ft. of muddy water. The Edwards lime was topped at 7,570 ft., and in addition to the showings logged, hard lime (probably the Buda) with an oil show was logged at 7,546-51 ft.

While the outcome of the production test may be disappointing, the showing is of considerable importance inasmuch as it throws new light on the Balcones fault-line area and opens a vast amount of acreage for exploration. The well is located downdip from the recognized fault-line zone in an area in which deep drilling has been very limited. It is about 45 miles southeast of the Pearsall field, and aproximately 75 miles southwest of the Luling field, the nearest fields in which Edwards lime production has been developed.

The possibilities of opening production from the lower Cretaceous age in this area has been recognized for some time, but development has been limited due to the expensive cost of drilling. However, the high per-acre recovery from Edwards lime production may provide an incentive for an increase in development through such counties as Dimmit, Frio, Atascosa, Wilson, Gonzales and Fayette counties.

Two Edwards Lime Tests Abandoned

While the above well was being prepared for testing, two other wildcats along this trend were abandoned. Continental 1 E. F. Burns, 7 miles southwest of Gonzales, William Newman Survey, was abandoned at 8,360 ft. The well topped the Austin chalk at 7,720 ft., base Austin chalk 8,070 ft., Buda lime 8,160 ft., Del Rio lime 8,215 ft., Georgetown lime 8,245 ft., and the Edwards lime at 8,310 ft. The other abandonment was Humble 1 Denton, 4 miles northeast of Asherton, Dimmit County, which was quit in the Edwards lime at 8,010 ft. These are important additions to the limited list of deep tests in the area, and the geological information furnished by them will be used to good advantage in future exploration.

Carrizo-Wilcox production was opened in another Pettus sand field in Bee County with the completion of Union Producing Co. 58 Ray, R. C. Ballard Survey, Pettus field. Total depth is 7,010 ft. and the well was tested through casing perforations at 6,943-63 ft. It is flowing at the rate of 3,000,000 cu. ft. of gas and 38 bbl. of distillate daily through a 9/32-in. choke, with working pressure 2,425 lb. The top of the sand section was logged at 6,943 ft. The field has been named the North Pettus field.

In the same county, and located in the Berclair area, Magnolia 1 E. H. Bucker, was being killed for another test after flowing at the rate of 354,000 cu. ft. of gas and 3.2 bbl. of distillate daily through a ⅛-in. choke from casing perforations at 10,370-10,398 ft. and 10,328-10,344 ft. Gravity of the distillate tested 58.5°.

On the southern portion of the La Gloria field, Brooks County, La Gloria Operators Committee apparently opened a new and shallower sand for the structure with the drilling of 5 South La Gloria unit. A 6-minute drill-stem test at 5,295-5,303 ft. tested 40 ft. of distillate and 645 lb. working pressure. The well was cored ahead and logged sand with an oil odor at 5,633-45 ft. and a drill-stem test was being made.

SOUTHWEST TEXAS COMPLETIONS
LOWER GULF COAST DISTRICT
Wildcats

Jim Wells County: Republic, Warren et al 1 Knolle, dry, T.D. 5,875 ft.

Nueces County: E. A. Graham 1 Adamson, dry, T.D. 7,611 ft.

(Continued on Page 76)

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CALIFORNIA FIELD REPORT

Los Angeles Mayor Vetoes Indoor Drilling Project

By L. P. STOCKMAN

LOS ANGELES, Calif. — The ordinance passed by the Los Angeles city council permitting drilling operations by Shell Oil Co. in the so-called Gilmore Island in the heart of a residential and business district in the city of Los Angeles has been conditionally vetoed by Mayor Bowron. The conditional veto means that the council can pass the measure again on the assurance that the mayor will sign the ordinance provided the conditions imposed are complied with. The provisions which the mayor said must be corrected before he will approve the ordinance permitting drilling operations are (1) inclusion of the entire 90-acre Gilmore Island and not only the 18 acres covered in the ordinance which provides for annexation to the city; (2) a clearer outline of the amount of compensation the city will receive in the nature of royalties; (3) further assurance from the War Production Board that materials for a pipe line will be approved after drilling operations have started, and (4) further assurance from the War Production Board that priorities will be granted for material for a building in which drilling operations will be housed. If conditions 1 and 2 are met but conditions 3 and 4 are not approved, the mayor indicated he might approve the drilling of one well.

Drilling Applications Show Increase

Applications for permission to drill, filed with R. D. Bush, state oil and gas supervisor, have shown a consistent increase the past 2 weeks and, while many of these have been for new wells and wildcats in the San Joaquin Valley, Los Angeles Basin was also quite prominently mentioned. Standard Oil Co. is going back into the Montebello field and will drill four new wells in the older section of the field. This new drilling is to step up production of the upper zones which produce a heavy crude oil that is eminently suited for fuel oil. At some future date it is quite likely that additional drilling will be undertaken in the Montebello extension in the extreme western end of the field, but this will require deep drilling. It is not likely that the bottom of the productive measures have been reached in the Montebello extension, where eight productive zones have been developed to date in the Pliocene and Miocene. A ninth productive zone is a distinct possibility, but since this area includes a townlot section and successful drilling would yield a light-gravity refining crude oil, no exceptions would be granted for drilling even if there were sufficient drilling crews and material available. The productive measures in the Montebello extension are rather badly depleted due to gas waste and the relatively small amount of oil sands in each zone. Several wells are still flowing in areas that have not been subjected to extensive drainage; but, for the most part, wells are producing on the beam. Abandonments during the past year have reduced the number of wells in the extension and additional abandonments may be expected down the flank of the structure as water encroaches and zone depletion takes place.

Continental Oil Co. is preparing to spud its fourth well in the Turnbull Canyon field of Los Angeles County, which to date has shown a wide variation in drilling depths and resulting production. Water broke in on the company's 1 Turnbull Community, the discovery well, a short time ago and it has been taken off production to squeeze the shoe of the water string. This well was finished on the beam, making 225 bbl. per day from 3,447 ft. Continental's 2 Turnbull Community, which was brought in under a natural flow, is the best well finished in the field to date, as 3 Turnbull Community, like the discovery well, required artificial stimulation to produce. Nos. 2 and 3 on the Turnbull Community lease required directional drilling to intercept the productive measure, as straight holes from their respective surface locations were unproductive. The former, located in the southern part of the Turnbull Canyon field, drilled through a fault and had to be whipstocked to the north in order to intercept the oil sand. This well, which proved to be an excellent flowing well, definitely limited the productive area of the field to the south as it, being bottomed south of a fault, indicated that the Turnbull oil zone was absent. In addition to restricting and defining the southern limits of production, the well reduced the probable productive acreage of the field about 50 per cent.

LOS ANGELES BASIN COMPLETIONS

Rosecrans, Los Angeles County: Barnsdall Oil Co. 21 O'Dea, 18-3s-13w, dry, T.D. 8,154 ft., well did not reveal much oil sand as being present, several production tests indicated lack of fluid and no kick.

Turnbull Canyon, Los Angeles County: Axis Petroleum Co. 1 Tandberg, 13-2s-11w, dry, T.D. 4,189 ft., produced small quantity of crude oil on the beam but small amount of oil sand and large amount of water precluded economic operation.

Wilmington, Los Angeles County: Long Beach Oil Development Co. 37-W, 10-5s-13w, flowed 600 bbl., 18.9-gravity, 1.2 per cent cut, 90,000 cu. ft. gas, 32/64-in. bean, T.D. 3,123 ft., perf. 2,803-2,978 ft., 3,021-3,111 ft., drilled to 3,148 ft., found hole crooked, P.B. and redrilled to 3,123 ft., completed in Ranger zone.

Preparations Under Way to Test Outpost of Paloma Field

General Petroleum Corp. has reached the critical depth in 61-33 Gallagher, in the Paloma distillate field of Kern County, and developments during the next week or 10 days may determine the future status of property out on the north flank of the Paloma structure. This well, which is bottomed at 11,043 ft., is being prepared for a production test following conclusion of a formation test that looked good but which was not at all conclusive. The outcome of this test may determine the future of acreage located north of the axis, because if 61-33 Gallagher proves to be a good well it will extend the limits of the Paloma field and might lead to additional drilling on acreage east and slightly south of this location. Formation in the bottom of the hole has been classed as a shale and oil sand, but since core recoveries have been poor it is not definitely known how good the zone is. On the formation test made several days ago the recovery consisted of some light-gravity oil, which is probably the usual condensate or distillate and a verying amount of natural gas. General Petroleum's outpost is located in 33-31s-26e, and a successful completion would prove up acreage held by several major companies. This outpost on the Gallagher property is located about 1 mile north of nearest production in the Paloma field at the present time, and for this reason is of paramount importance.

General Petroleum's Gallagher outpost in the Paloma field is substantially lower structurally than successful wells drilled by Ohio Oil Co., Western Gulf and Texas, and if the zone found by General Petroleum Corp. is the equivalent of the Paloma zone it means a difference of approximately 1,500 ft. vertically in a distance of slightly over a mile. General Petroleum has been very successful in the drilling of outpost wells, as it was the first to appreciate the possibility that the Vedder and Rio Bravo zones of Miocene age in the Greeley field might extend far beyond expectations early in the life of the field. It pioneered extension work and has consequently completed several excellent flowing wells in the northern part of the Greeley field. As a result, the Greeley field and the Rio Bravo field are now less than 2,500 ft. apart, and General Petroleum Corp. holds several leases that have been fully developed in the northern part of the Greeley field.

East Coalinga Field Wells Returned to Production

Shell Oil Co. got a pleasant surprise in the East Coalinga field of Fresno County early in the week when two wells that had been idle for several years were reconditioned and returned to production. One of these old wells, 7-32 in 32-19s-15e, started flowing while the crew was bailing after the hole had been been deepened from 2,875 ft. to 3,030 ft. It is not likely this well will maintain a steady flow, as the East Coalinga field is an old area and in a depleted state as far as flush production is concerned. The kick in this well may be due to an accumulation of gas that had been trapped. This field was shut in for several years and it showed the usual response after production activities were resumed some time ago, as during the period of dormancy the reservoir probably established an equilibrium. These wells, for the most part, came back on production producing several times their production when shut in, but gradually settled back to the decline curve that had been projected. Another well, Shell's 10-14 in 14-19s-15e, has been returned to production pumping 90 bbl. per day after the hole had been plugged back from 2,102 ft. to 2,010 ft. This is substantially higher than the average well production in the field.

The South Belridge field of Kern County, which produces a heavy grade of crude oil, is becoming increasingly active, and present indications point to the probable completion of 25 new wells during the next 90 days. The only reason that it will take 90 days to complete these new shallow-zone wells is the lack of experienced drilling crews. Belridge Oil Co. at present is drilling one well, but has locations staked for six additional wells. General Petroleum Corp. is running one string of tools and has location made for two more wells, while Ohio Oil Co. is working on one well and has location staked for another. Union Oil Co., which has drilled several shallow wells on the Hopkins property during the past 6 months, has locations staked for four additional wells. Drilling in this field is rapid, with production found around 800 ft. to 1,200 ft., and susceptible of development by portable equipment. Actual drilling time is around 4 days, but it usually takes another week or 10 days for rigging up pumping equipment. East and West Coalinga, Kern River, Midway-Sunset and other San Joaquin Valley fields that yield heavy crude oil are being actively developed, and the only limitation is that imposed by lack of experienced crews and critical material.

SAN JOAQUIN VALLEY COMPLETIONS

Antelope Plains, Kern County: Shell Oil Co. 34-6 Williams, 6-28s-20e, flowed 367 bbl., 16.1-gravity, 0.5

per cent cut, T.D. 2,355 ft., perf. 2,187-2,343 ft., completed in Williams zone of Miocene age, brown shale 939 ft., Valvulinia 1,588 ft., base brown shale 1,788 ft., 1-A sand 1,794 ft., gas sand 2,107 ft., oil sand 2,183 ft., Santos shale 2,353 ft.

Belridge, South, Kern County: Belridge Oil Co. 48-33-A fee, 33-28s-21e, pumped 70 bbl., 14.1-gravity, 10 per cent cut, T.D. 815 ft., perf. 540-815 ft., completed in upper Belridge zone of Pliocene age.

Coalinga, West, Fresno County: Texas Co. 2-C Coalinga, 6-20s-15e, pumped 95 bbl., 17.8-gravity, 0.1 per cent cut, T.D. 2,100 ft., perf. 1,904-2,089 ft., completed in upper Coalinga zone of Pliocene age.

Dyer Creek wildcat district, Kern County: Bolsa Chica Oil Co. 1 Clark, 26-25s-26e, dry, T.D. 2,931 ft., base Valvulineria 2,870 ft., gray Olcese sand 2,917 ft., did not reach Vedder sand of Miocene age as well was running too low structurally to justify additional drilling.

Kerman wildcat district, Fresno County: Richfield Oil Corp. 1 Burns, 30-13s-17e, dry, T.D. 3,726 ft., base of Santa Margarita 3,418 ft., abandoned in shale and gray sand, no showings of oil or gas worth testing.

McKittrick, Kern County: Richfield Oil Corp. 1 U. S. Ninkovich, 3-30s-21e, dry, T.D. 1,600 ft., bottomed in shale and gray sand, no showings of oil or gas logged.

Midway-Sunset, Kern County: Chanslor-Canfield Midway Oil Co. 41-9 fee, 9-32s-23e, pumped 27 bbl. net, 15.6-gravity, 26 per cent cut, T.D. 1,595 ft., perf. 1,364-1,513 ft., completed in Ethegoin of upper Pliocene age.

Standard Oil Co. 91-27-B fee, 27-31s-23e, pumped 156 bbl., 22-gravity, 20 per cent cut, T.D. 3,113 ft., perf. 2,864-3,104 ft., Mulinia 2,520 ft., Wilhelm sand 2,635 ft., gusher sand 2,700 ft., completed in so-called gusher sand 2,864-3,113 ft. of Pliocene age.

Riverdale, Fresno County: Amerada Petroleum Corp. 4-23 Courney, 23-17s-19e, flowed 619 bbl., 37.3-gravity, 0.3 per cent cut, 815,000 cu. ft. gas, 18/64-in. bean, pressures 970/640 lb., T.D. 6,833 ft., perf. 6,803-18 ft., 6,825-30 ft., completed in Lawton zone of Miocene age.

Round Mountain, Kern County: Shell Oil Co. 22 Freeman, 20-28s-29e, pumped 155 bbl., 16.7-gravity, 22 per cent cut, T.D. 1,813 ft., completed in Vedder zone of Miocene age.

Woodland wildcat district, Yolo County: Tide Water Associated Oil Co. 1 Woodland Community, 8-9n-1e, dry, T.D. 3,587 ft., formation test 3,352-99 ft., recovered 2,800 ft. mud and gas-cut mud, Tehama formation 2,600 ft., Hooper formation 3,368 ft., abandoned in gray sand.

COASTAL DISTRICT

R. E. Havenstrite is still working with his 2 Barnes in the Del Valle field of Los Angeles County, attempting to effect a satisfactory formation test of the interval at 7,100-7,200 ft., which showed up quite favorably on an electrical survey. This interval was not given much thought during drilling, but looked good enough to test out at a later date. The shoulders have failed several times and the packers have failed to hold with the result that no satisfactory formation test has been made. This well cored an exceptionally good-looking oil sand at 7,975 ft., and it may be possible the well will be completed in this new zone. The sand in the bottom of the hole has plenty of kick, and for this reason it is not known whether it is a gas sand or a high-pressure zone. No test has been made of the lower zone, and hence its productivity is not known. In the San Martinez field, located immediately west of the Del Valle field, Standard Oil Co. and Ohio Oil Co. are within 1,000 ft. of the completion depth which in these cases will be the Pliocene zone found by Standard Oil Co. a few months ago. The extent of this new upper zone has not been determined, as only one well, 3 Sepulveda, has been completed to date. This well, however, showed large flush production, which tends to indicate the Pliocene zone may prove to be of importance from a production standpoint. Previous to discovery of this Pliocene zone all prduction from fields in the Newhall-Castaic quadrangle was derived from formations of Miocene age, principally the Modelo.

Each new well in the Newhall Potrero field of Los Angeles County, but which is carried in the coastal district due to its location in the Newhall-Castaic region, makes the field look better. For several years it was thought the productive limits would be within the area defined by the south fault and the district for about 1 mile to the north. Subsequently, C. G. Willis and associates drilled and completed 1 Ferguson, located 1 mile southeast of Barnsdall's production in the New-

(Continued on Page 76)

TEXAS GULF COAST

Pair of Wildcats Report Shows In Tertiary Wilcox Zone

By F. L. SINGLETON

HOUSTON, Tex.—Additional showings were reported logged in Ohio Oil Co. 1 First National Bank, a prospective Wilcox sand pool opener located in the Orange Hill area, Austin County. Sand with an oil odor was cored at 9,297-98 ft., broken sand with an oil show at 9,298-9,300 ft., and sand with an oil show at 9,302-09 ft. Two drill-stem tests were attempted but both failed and the well was cored ahead to a depth of 9,510 ft. At the end of the week the hole was being reamed and casing may be cemented for testing. The Wilcox was topped at 8,953 ft., with the first showings logged at 9,084-9,137 ft. and at 9,143-64 ft. Location is in the V. Florez Survey, 3 miles southeast of Orange Hill.

Another wildcat located along the trend reported showings. It is George W. Strake 1 T. J. Peel, 4 miles northeast of Montgomery in the Owen Shannon Survey, Montgomery County. Sand and shale with showing of gas distillate were reported logged at intervals from 6,886-6,936 ft. The Cockfield was topped at 3,750 ft., Eponides Yeguaensis at 4,284 ft., Certabulimina at 5,305 ft., Operculina at 5,530 ft., and the Weches at 6,295 ft. The showings are believed to have been logged near the top of the Wilcox.

Discovery Northwest of Lake Creek Gaged

A new field, or a 3-mile-northeast extension to the Lake Creek field, Montgomery County, was assured as Superior Oil Co. of California 1 E. G. Frost was showing for a producer while cleaning out. After squeezing off perforations at 9,985-10,004 ft., the hole was drilled out to 11,818 ft. and the well was tested after running 2½-in. tubing with a 15-ft. perforated nipple on bottom to 11,497 ft. On a 12-hr. gage, it flowed at the rate of 167 bbl. of 47-gravity oil daily through a 22/64-in. choke with tubing pressure 1,700 lb. If this well is located on the Lake Creek structure, it opens a new sand and the fourth for the field, and marks the field as one of the largest Wilcox sand pools to be opened along the trend.

In the same county, and located 3 miles southeast of the town of Magnolia, La Gloria Corp. 1 Grogan-Cochran Lumber Co., A. Pratcher Survey, is drilling in shale below 10,570 ft. Seven-inch casing was cemented last week at 10,335 ft., and showings of oil and gas have been reported although this has not been confirmed.

Five miles northwest of Edna, Jackson County, Texas Co. was cutting and pulling liner in 1 O. D. Collier, a prospective pool opener located in the J. Kerr Survey. Casing was perforated the past week at 2,480-82 ft., and the well swabbed dry. Drill-stem testing 2 weeks ago in the same sand recovered oil and salt water. The Discorbis was topped at 3,200 ft. and the Heterostegina at 3,320 ft.

Jackson County gained a new wildcat operation with the staking of W. S. Boyle et al 1 J. M. Heard, 4 miles northeast of the town of Ganado in the F. Menefee Survey. The well is located on a farmout from Humble Oil & Refining Co.

The North Bay City field, Matagorda County, had promise of a second producer as Ohio Oil Co. prepared to complete 1 McDonald Account 2. Total depth is 8,845 ft., and completion is being made in the 7,700-ft. Frio sand. In the same area, Sun 1 McDonald was coring below 8,100 ft., and should be ready for testing by the end of the week.

Evidence that production in the Ganado and Harmon field, Jackson County may be joined was revealed the past week with the completion of Texas 1 Robertson-Ross, completed through casing perforations at 5,405-15 ft. and 5,370-82 ft. for an initial production of 112 bbl. daily through a ⅛-in. choke. The well is located on the extreme southeast side of the Ganado field, and the sands are believed to correlate with those of the Harmon field, several hundred feet to the southeast.

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LOUISIANA GULF COAST

Gulf Opens New Miocene Pool On Bayou Couba Prospect

By F. L. SINGLETON

NEW ORLEANS, La.—The Bayou Couba prospect, 12 miles south of New Orleans, St. Charles Parish, was added to the list of producing fields in the Louisiana Gulf Coast district with the completion of Gulf 1 Delta Securities Co. in 13-15s-21e. With the hole bottomed in salt at 6,917 ft., casing was perforated in the Miocene sand at 6,536-42 ft. and the well is flowing at the rate of 372 bbl. of 36.1-gravity oil daily through a ¼-in. choke. Tubing pressure was 900 lb. The discovery looms as an important reserve in view of the multiplicity of sands logged in the discovery well. These sands were logged at intervals from 2,200-6,500 ft., and while none was drill-stem tested, all are believed capable of producing. The structure is to be developed rapidly as two new operations have already been started.

In the Krotz Springs area, St. Landry Parish, Gulf 1-E Hass-Hirsch was drilling in shale below 7,630 ft. Side-wall cores cut in the Marginulina formation are reported to have carried gas odors. Location is in 21-6s-7e.

The importance of Amerada 1 Angelloz, located on the Grosse Tete prospect, Iberville Parish, will probably not be determined until several weeks as the well blew out a second time and caught fire and burned for 12 hours before the fire was extinguished. Total depth is 10,426 ft. and the blowout occurred after topping a sand section just above this depth.

Texas 3-B Le Danois Land & Stone Co., located on the southwest flank of the Pine Prairie dome, Evangeline Parish, is drilling in shale below 8,370 ft. Correlated with 2-B Le Danois, recently completed to open a new producing area for the structure, the well is reported to be 30 ft. higher.

Texas 1 City of New Orleans, a semiwildcat located on the extreme east side of the Leeville field, La Fourche Parish, blew out from a total depth of 5,200 ft., caught fire and cratered, The fire was extinguished, but the well is still blowing gas, mud and salt water and the crater is reported to be about 125 ft. wide. The sand is be-

(Continued on Page 76)

NORTH CENTRAL TEXAS

Deep Zones in Fort Worth Basin Continue to Pay Off

By ROBERT INGRAM

WICHITA FALLS, Tex. — Deep zones in the heart of the Fort Worth basin in Montague County paid off again last week with a new pool from the Simpson or Ellenburger or both at Continental Oil Co. 1 Hildreth, Block 53, E.T. Survey, west of Bowie in the southwestern part of the county, and in the Gant-Turner area.

Early in the week, while testing at total depth of 7,256 ft. in Ellenburger at 7,240-56 ft., it flowed 50 bbl. of oil in 30 minutes through 1-in. tubing choke after a 60-hour shut-in. Casing pressure declined from 650 lb. to 350 lb. Operator changed to 20/64-in. choke and the well flowed 20 bbl. of oil in 1 hour and 45 minutes with casing pressure of 350 lb. at start and 250 lb. at end.

Shut in for another 16 hours, the well then flowed 10 bbl. of oil in 2 hours through 6/64-in. choke with casing pressure back up to 440 lb. at the beginning and 405 lb. at the end of the test. At the week's end it flowed 61 bbl. of oil in 21 hours through 7/16-in. choke, making 2¾ bbl. an hour the last 3 hours. Operator then started pulling tubing and planned to test through casing.

Liner was set at 7,100 ft., above the Simpson, which was topped at 7,170 ft.

Four miles northeast of the Hildreth, Youngblood & Foree of Dallas and Oklahoma City staked location for 1 C. E. Quillin, in the center of a 617-acre tract in the F. J. Bellowe Survey A-32, to go to 8,000 ft. for a test of the Ellenburger.

Meantime, Continental was trying to make a well of its second test in the Mueller pool, also near Bowie, a Simpson sand producer. New test was the 1 Richardson, south offset to the discovery in Block 43, Hill C.S.L. Survey. From sand at 7,254-63 ft. it swabbed 45 bbl. in 17 hours, then lost the swab and was fishing.

In the same area but in Wise County, Stanolind Oil & Gas Co. 1 Menasco, Block 9, Falls C.S.L. Survey, 1½ miles northwest of Park Spring, topped the Simpson at 6,813 ft. and drilled lime with shows of oil from 6,813 ft. to 6,820 ft. It then drilled dolomite with odor of oil from 6,890 ft. to 6,905 ft. and on a 30-minute drill-stem test at 6,880-6,905 ft. recovered 12 ft. of oil-cut mud. At the week's end it was drilling at 7,056 ft. in dolomite.

Spudder Rigged to Drill In

Humble Oil & Refining Co. 1 Matthews, Alvin Tarter Survey, 9 miles southwest of Throckmorton in Throckmorton County, tore out rotary and was moving in spudder to drill plug. This test topped the Mississippi lime at 4,570 ft. and the Caddo lime at 4,168 ft., drilled to 4,613 ft. and set 5½-in. casing at 4,592 ft. In the Caddo it had shows of oil at 4,172-80 ft., 4,257-68 ft., and 4,355-74 ft. Shale with streaks of lime showing oil saturation was found at 4,375-4,425 ft. In the Mississippian, lime showing oil and gas was drilled from 4,597 ft. to 4,599 ft. and saturated lime from 4,595 ft. to 4,613 ft.

Casing Set for Test

Joe Worsham 1-A Hensley, T. Martinez Survey, southeastern Jack County wildcat test indicating a new sand pool for the county, was swabbing off bottom and making a small amount of wet gas. Sand was topped at 5,281 ft. and saturated sand was drilled from that depth to 5,308 ft., total depth. Five-and-one-half-inch casing was set at 5,270 ft. The test blew gas after plug was drilled and will be deepened.

Noodle Creek Field Extended

FORT WORTH, Tex.—Jones County's old Noodle Creek area added its first producer in several months last week with a 1-mile-south extension. It was Cardinal Oil Co., of San Angelo, 1 Priscilla Williamson, NW NW Section 31, Block 18, T.&P. Survey, completed with initial gage of 39.7 bbl. of oil in 2 hours, flowing through ⅜-in. tubing choke from total depth of 3,084 ft. in sand. It had 5-in. pipe set at 3,078 ft. Pay was from oil sand at 3,080-82 ft. and 3,083-84 ft.

Only the short 2-hour gage was taken because of lack of storage, but the well was rated with a daily potential of 472 bbl., natural. Gravity was 42, gas-oil ratio 175:1.

The well first showed for a producer when it filled with oil and flowed in 59 minutes after deepening 2 ft. to 3,084 ft., 4 ft. in Swastika pay sand.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Coleman County: Dale Smith 1 J. P. Morris estate, David Breeding Sur. 728, dry, T.D. 2,335 ft.

Miscellaneous

Stephens County, north of Breckenridge: Orion A. Daniel 1 W. H. Green, Sec. 1289, T.E.&L. Sur., est. 1,000,000 cu. ft. gas, no test, completed as shut-in gas well, no outlet, Caddo lime 3,308 ft., acid 3,305-11 ft., T.D. 3,342 ft., P.B. 3,320 ft.

E. P. Griffin 1 W. H. Green, Sec. 1284, T.E.&L. Sur., est. 7,000,000 cu. ft. gas and 10 bbl. oil, no test, completed as shut-in gas well, no outlet, Caddo lime 3,286 ft., acid 3,296-3,303 ft., T.D. 3,303 ft.

NORTH TEXAS COMPLETIONS

Wildcats

Archer County: Bridwell Oil 1 L. F. Wilson-H, SW SE SE Sec. 71, A.T.N.C.L. Sur., dry, T.D. 1,456 ft.

Parker County: Harvey Drilling 1 Ella Gilbert, G. W. T.&P. Sur. A-1958, junked, T.D. 4,832 ft.

Throckmorton County: Humble 2 Mrs. J. Parrott et al, Sec. 957, T.E.&L. Sur., dry, T.D. 4,045 ft.

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ILLINOIS FIELD REPORT

Test in Boulder Pool Has Large Flow From Devonian Lime

MATTOON, Ill.—The opening of the Devonian lime to production in the Boulder pool, Benoist oil field, in the heart of Clinton County's Kaskaskia River bottoms, appears to have provided Illinois with one of its best oil discoveries of the year. E. Frank Jones last week announced that his 2 Harrison, SE NW 2-2n-2w, gushed oil from the new pay formation upon being drilled in and indications are that the well will be anywhere from a 1,000 to 5,000-bbl. producer.

No. 2 Harrison is located on the same 80-acre tract as the E. Frank Jones 1 Harrison, officially listed as the discovery well of the Boulder pool. No. 1 Harrison, however, is a Benoist producer. Pipe was set at 2,610 ft. at the 2 Harrison and plug was drilled only 7 ft. into the pay, with operators believing that there are at least 40 ft. more of pay lime. At 2,633-40 ft. a heavily oil and gas saturated core was recovered.

Previously, all production in the Boulder pool had been from the Benoist sand. The first test drilled in what is now the Boulder pool, however, Texas 1 Price Gray, S½ NW SE 35-3n-2w, drilled in 1941, reported shows in the Benoist and Devonian and, after being completed in the Devonian, blew off 250 bbl. of oil and then went to dry gas. It was shut down and not produced. No. 2 Harrison is the first test to be drilled to the Devonian since the pool was opened. Many Illinois oil men are of the opinion that the pay opened at 2 Harrison will be extensive not only in the Boulder pool itself but for several miles near it. Thus the Devonian strike may be the stimulation needed to restore activity in the area, which for the past few weeks has been at its lowest point since 1937.

New Jefferson County Pool

About ½ mile south of the State Game Farm, Nash Redwine 1 Wilmore, NW SW 27-3s-3e, is being completed to open a new pool in the Aux Vases and Levias formations. After drilling plug to the Aux Vases sand the hole filled with 2,000 ft. of oil. The well is being pump tested from both pays before completion.

While the rapid increase in new work which followed the liberalization of spacing regulations 3 weeks ago is continuing on the upward trend, completions in Illinois continue to remain at a low ebb. However, sufficient time has not elapsed to allow completions to catch up with the new work, and a noticeable increase in completions will be recorded within the next few weeks. Although operations are up in all areas in the state, White and Hamilton counties were the most active during the past week with 13 and 11 first reports respectively. Hamilton County led in total operations with 36 and White County, after having dropped to eleventh place, was second with 30 operations. Wayne County was third with a total of 26 operations.

ILLINOIS COMPLETIONS

Wildcats

Edgar County: Olson Drlg. 1 Morrow, NW NE NW 12-15n-14w, dry at 929 ft., Devonian 897 ft.

Fayette County: Paul Doran 1 Bush, SE NE NW 28-6n-2e, dry at 2,115 ft., Glen Dean 1,577 ft., Golconda 1,630 ft., Weller 1,730 ft., Paint Creek 1,839 ft., Benoist 1,877 ft., Benoist sand 1,892 ft., Renault 1,940 ft., Aux Vases 1,957 ft., Ste. Genevieve 2,015 ft., Fredonia 2,045 ft., St. Louis 2,114 ft.

Franklin County: E. S. Adkinson 1-S Harrison, SE SE NE 26-5s-1e, pumped 2½ bbl., 15-qt. shot 2,688-2,700 ft., 60-qt. shot 2,672-88 ft., Aux Vases 2,645 ft., T.D. 2,857 ft., P.B. 2,700 ft.

Thompson-Vetsch 1 J. L. Davis, SE NE SE 32-6s-1e, dry at 2,912 ft., Waltersburg 1,914 ft., Vienna 1,981 ft., Glen Dean 2,133 ft., Golconda 2,215 ft., Barlow 2,328 ft., Gypress sand 2,367 ft., Benoist 2,513 ft., Renault 2,528 ft., Aux Vases 2,577 ft., Aux Vases sand 2,956 ft.

E. S. Adkins 1 Boner heirs, SE SW NW 31-7s-3e, dry at 2,984 ft., Kincaid 1,605 ft., Degonia 1,741 ft., Palestine 1,813 ft., Menard 1,959 ft., Waltersburg 2,033 ft., Tar Springs 2,103 ft., Glen Dean 2,182 ft., Hardinsburg 2,233 ft., Golconda 2,320 ft., Barlow 2,465 ft., Cypress sand 2,480 ft., Paint Creek 2,640 ft., Aux Vases 2,741 ft., McClosky 2,910 ft.

Hardin County: B. K. Leach 1 J. Porter, SW SE SW 2-11s-9e, dry at 1,822 ft., Palestine 208 ft., Tar Springs 395 ft., Glen Dean 1,640 ft., Hardinsburg 1,668 ft., Golconda 1,690 ft.

Jasper County: A. H. Gibson 1 J. Seiler, E½ NE SW 7-5n-14w, dry at 2,903 ft., Glen Dean 2,322 ft., Golconda 2,405 ft., Barlow 2,495 ft., Weller 2,580 ft., Paint Creek 2,665 ft., Benoist 2,715 ft., Renault 2,780 ft., Aux Vases sand 2,790 ft., Ste. Genevieve 2,828 ft., McClosky 2,886 ft.

Madison County: J. Menhall 1 Holtzgrave, SW SW SE 19-3n-6w, dry at 2,404 ft., Louisiana 1,730 ft., Chattanooga 1,757 ft., Devonian 1,807 ft., Maquoketa 2,205 ft., Trenton 2,379 ft.

St. Clair County: Watkins Drlg. et al 1 North, SW SW NE 5-2n-6w, dry at 2,471 ft., St. Louis 802 ft., Devonian 1,790 ft., Trenton 2,440 ft.

Wabash County: Skiles et al 1 Wheatley, E½ NE SE 2-1s-13w, pumped 35 bbl., 30-qt. shot 2,468-74 ft., Bethel 2,464-77 ft., T.D. 2,477 ft., pool opener.

Washington County: T. M. Conrey et al 1 E. Liebrock, SW SW NW 21-2s-3w, dry at 1,475 ft., Glen Dean 957 ft., Hardinsburg 1,005 ft., Golconda 1,042 ft., Cypress 1,162 ft., Cypress sand 1,208 ft., Paint Creek 1,259 ft., Benoist 1,314 ft., Aux Vases 1,408 ft.

Wabash County: Kneipp et al 1 Wright, SE SW SW 9-1n-12w, dry at 1,670 ft.

Fields

Bible Grove, Clay County: Pure 2 Nodler, NW NE SW 4-5n-7e, pumped 16 bbl. oil and 152 bbl. water, 20-qt. shot 2-518-28 ft., perf. 2,499-2,520 ft., Weller 2,510-26 ft., T.D. 2,534 ft., P.B. 2,522 ft.

Boulder, Clinton County: Murphy & Goldsmith 3 Goldsmith, NE NW NW 2-2n-2w, pumped 110 bbl., 15-qt. shot 1,220-30 ft., Benoist sand 1,217 ft., T.D. 1,231 ft.

Murphy et al 2 fee, SW NE NW 2-2n-2w, pumped 352 bbl. oil and 30 bbl. water, 5-qt. shot 1,223-28 ft., 15-qt. shot 1,220-30 ft., Benoist sand 1,215 ft., T.D. 1,230 ft., P.B. 1,228 ft.

Texas 1-B J. J. Schaefer, SW SW NE 35-3n-2w, dry at 1,231 ft., Glen Dean 902 ft., Hardinsburg 925 ft., Golconda 956 ft., Barlow 1,030 ft., Cypress sand 1,100 ft., Paint Creek 1,156 ft., Benoist sand 1,224 ft.

Texas 8 P. Gray Comm., NE SE SE 35-3n-2w, pumped 28 bbl. oil and 27 bbl. water, 5-qt. shot 1,221-26 ft., Benoist 1,215-20 ft., T.D. 1,229 ft.

Texas 1-A J. H. Schaefer, SW SE NW 35-3n-2w, pumped 61 bbl. oil and 19 bbl. water, 5-qt. shot 1,221-24 ft., Benoist 1,217 ft., T.D. 1,224 ft.

Clay City, Clay County: Pure 14 Leon Clark, W½ SE SW 8-2n-8e, pumped 12 bbl., natural, Cypress sand 2,648 ft., Weller pay 2,650-61 ft., T.D. 2,662 ft.

Covington, Wayne County: Deep Rock 1 Smith, E½ SE SW 30-1s-7e, pumped 688 bbl., 2,000 gal. acid, reacidized 4,000 gal., McClosky 3,220-26 ft., 3,240-42 ft., T.D. 3,251 ft.

Dale, Hamilton County: Shell 3 G. W. Morris, NW NW SE 18-6s-7e, pumped 22 bbl. oil and 3 bbl. water, 115-qt. shot 3,035-64 ft., Aux Vases sand 3,030-32 ft., 3,036-40 ft., T.D. 3,064 ft.

Cameron et al 1 Hall Biggerstaff, SW NW NW 5-6s-7e, dry at 3,065 ft., Glen Dean 2,470 ft., Golconda 2,629 ft., Barlow 2,736 ft., Weller 2,762 ft., Benoist 2,956 ft., Aux Vases sand 3,050 ft.

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OKLAHOMA FIELD REPORT

Second Sand Zone Found at Otoe City Pool, Noble County

By CARL HOOT

TWO wells in the Otoe City pool of Noble County extended the field to the north and west and added a second pay zone. Reynolds & Graham 1 Jung-Donahoe, W½ SW NE 16-22n-1e, was the north extension and added the second sand pay to the field when a shot at 1,761 ft. caused a bridge at 1,250 ft. After cementing the plug was drilled out at 2,740-50 ft. in sand and the well flowed 350 bbl. of oil in 12 hours. The sand has been tentatively identified as the Tonkawa. This well had previously been ordered abandoned after finding the Layton sand dry. A ¼-mile west extension and classed as a wildcat by operators, Superior Oil 1-B Loula, W½ NE SW 16-22n-1e, made a small producer from Layton sand at 3,404-30 ft. After a 10-qt. shot on bottom the well pumped 29 bbl. of oil a day.

Two large wells were added to the East Watchorn pool of Pawnee County. Extending the field ¼ mile south, Alma Oil Co. 1 Robedeaux, SW NE SE 26-23n-3e, flowed 1,000 bbl. in 15 hours from the Wilcox at 3,955-69 ft. The same company's 1 Brown, NW NE 26-23n-3e, on the western side of the field, flowed 460 bbl. from 3,980-85 ft.

About 7 miles southwest of the East Watchorn pool, in Noble County, Sunray Oil Co. 1 Schultz, NW NE 9-22n-2e, was reported to have had an increase of oil and a showing of gas at plugged-back depth of 2,607 ft. Location is ½ mile north of the discovery well. Deep Rock's 1-B Schultz was waiting on cement at plugged-back depth of 2,455 ft.

OKLAHOMA COMPLETIONS

Wildcats

Alfalfa County: Olson 1 Atchinson, NW SE SE 12-24n-11w, dry at 7,300 ft., May 6,245 ft., Sylvan 6,965 ft., Viola 7,055 ft., Wilcox 7,210 ft., second Wilcox 7,279 ft.

Creek County: Mars 1-A Kelly-King, NW SW 35-18n-8e, location abandoned.

Lahoma 2 McIntosh, SW NW NE 7-16n-10e, dry at 3,185 ft., Woodford 3,100 ft., sand 3,140 ft.

Karan 1-A Mike, SE SW 5-16n-10e, dry at 438 ft.

Lincoln County: Magnolia 1 Perkins, SW NE SW 31-14n-6e, dry at 4,630 ft., Sylvan 4,620 ft., Hunton 4,534 ft.

Logan County: Continental 1 Bennett, SE SE 5-17n-2w, dry at 5,849 ft., Hunton 5,466 ft., Viola 5,580 ft., Wilcox 5,709 ft.

Noble County: Mason 1 Bunch, SE NE NE 8-24n-3e, dry at 4,241 ft., Wilcox 4,205 ft., chert 4,229 ft., dolomitic sand 4,230 ft.

Superior 1-B Loula, W½ NE SW 16-22n-1e, pumped 29 bbl., 10-qt. shot on bottom, Layton 3,404 ft., pay 3,404-30 ft., T.D. 3,430 ft.

Pawnee County: Keener 1 Glean, NE NW 27-21n-5e, dry at 3,281 ft., Prue 3,062 ft.

Fields

Aztec, Okmulgee County: Bryant 1 Jacobs, SE SW 6-11n-12e, dry at 2,415 ft., sand 1,375 ft.

Big Pond, Creek County: Magnolia 4 Lewis, SW NE SW 30-15n-8e, dry at 3,865 ft., Woodford 3,680 ft., Sylvan 3,717 ft., Viola 3,770 ft., Wilcox 3,808 ft., second Wilcox 3,834 ft.

Crescent, Logan County: Gulf 2 Good, SE NW 27-17n-4w, flowed 127 bbl., 30-qt. shot 4,944-74 ft., Layton 4,920 ft., pay 4,925-74 ft., T.D. 4,974 ft.

Doyle, Stephens County: Cox-Harmon 1 Burns, NW NE 13-1n-5w, flowed 124 bbl., perf. 5,376-86 ft., sand 5,942-6,260 ft., 14,000,000 cu. ft. gas with 32 bbl. distillate per 1,000,000 cu. ft., dual completion.

East Watchorn, Pawnee County: Alma 1 Robedeaux, SW NE SE 26-23n-3e, flowed 1,000 bbl. in 15 hr., Wilcox 3,955 ft., pay 3,955-69 ft., T.D. 3,969 ft.

Alma 1 Brown, NW NE 26-23n-3e, flowed 460 bbl., Wilcox 3,980 ft., pay 3,980-85 ft., T.D. 3,985 ft.

Guthrie, Logan County: Fain Drlg. 1 Holland, NE SW SW 8-17n-1w, dry at 5,509 ft., May 5,085 ft., Sylvan 5,170 ft., Viola 5,264 ft.

Jenks, Tulsa County: Sand Springs Home 2 Nixon, SE NE NE 31-18n-13e, dry at 2,410 ft., May 1,843 ft., Wilcox 2,137 ft.

Maud, Pottawatomie County: Mid-Continent 2 Lovelace, NW NE SE 12-8n-4e, 193 bbl., perf. 4,280-4,304 ft., 2,000 gal. acid, reacidized 6,000 gal., perf. 4,120-30 ft., 2,000 gal. acid, Hunton 4,118 ft., Viola 4,279 ft., pay 4,120-30 ft., T.D. 4,323 ft.

Morris, Okmulgee County: Link 1 Fixico, SW NW 34-13n-14e, dry at 2,659 ft., Wilcox 2,637 ft.

Osage City, Osage County: Moore Oil 11, SW NW SE 36-22n-8e, pumped 25 bbl., 3,000 gal. acid, Oswego 1,950 ft., pay 1,950-80 ft., T.D. 1,980 ft.

Tussy, Carter County: Skelly 2 Miller, NE SW NE 5-1s-3w, pumped 250 bbl., T.D. 2,920 ft.

Velma, Stephens County: Skelly 36 Selby, NE SW SW 26-1s-5w, pumped 8 bbl., 5-qt. shot 757-67 ft., oil sand 750-67 ft., T.D. 771 ft.

Miscellaneous, Osage County: Ohio Osage 2, NE SW NE 32-22n-9e, 8,500,000 cu. ft. gas, Burgess 2,199 ft., pay 2,199-2,240 ft., T.D. 2,240 ft.

ROCKY MOUNTAIN AREA

Sunburst Sand Field Opened In Pondera County, Montana

By T. R. INGRAM

DENVER, Colo.—The first well drilled to the Embar-Tensleep black-oil horizons in Grass Creek since 1935 was completed this week in Ohio Oil Co. 74 Mill Iron Cattle, an outside well at the south end of the field. The 7-in. was cemented on top of the Embar at 4,171 ft., 559 ft. of 4¾-in. perforated liner was set on bottom at 4,512 ft. It pumped 150 bbl. per day initial. Most of the 30,000,000 bbl. of oil produced in this field was light crude from the Frontier sands. Prior to this completion only 14 wells had been drilled to the Embar-Tensleep and these were produced at intervals whenever there was a demand for the oil up to the time of the national emergency when the production of black oil throughout this region was stimulated. The 14 wells were estimated capable of pumping an average of 400 bbl. each daily. These were so located as to prove about 2,000 acres. The new producer is ¼ mile southeast of 72 Mill Iron, the nearest producer, which was completed in the Embar late in 1935 and pumped 774 bbl. first 24 hours. It did not go to the Tensleep. It is ½ mile from the nearest Tensleep well and proves up several hundred acres at the south end.

New Pool Opened in Montana

R. C. Tarrant has opened a new pool of undetermined size in the Sunburst sand in the Midway district, 8 miles east of Conrad, Pondera County, Montana, in 1 DeSteffaney, C NW NE 30-28n-1w, a small producer. It had saturated Sunburst sand at 1,725-45 ft. in which oil rose from 250 to 300 ft., there being no water. Tubing was run and in a pumping test it made 8 bbl. in 5½ hours, and the operator considers it a commercial well good for 12 bbl. a day when finally completed. The 20-ft. sand was hard and tight and will be shot. The location is ¾ mile northwest of his 1 Wood, started last May as a test to the Devonian. This well had a show of 43° oil in the first 10 ft. of Sunburst sand at 1,690-1,720 ft., and had some water in the remainder of the horizon. It is drilling below 2,000 ft. to test deeper horizons. Tarrant is drilling another well better than a mile to the west to test out the area. The shows in the two wells indicate the area may develop into a profitable operation and considerable leasing is reported.

The Montana-Dakota Utilities Co., operator of the Bowdoin field gas units in Phillips County, Montana, is carrying on its new development campaign under the unit agreements and this week reported five completions and five new operations. The wells are spaced in or near the center of 160-acre tracts. They spud to around 100 ft. with a spudder where the 8⅝-in. is set. They are then shut down to await rotary for completion. The 5½-in. is set on top of the Bowdoin sand, a perforated 4½-in. liner is then set on bottom and 1½-in. tubing with 3 bottom ft. perforated is set.

Of the several important wildcats drilling in Colorado, the Broderick & Gordon 1 Government, Chimney Creek district, Routt County, is the nearest to completion. It is drilling at 3,256 ft. in hard quartzite formation.

McGarr Petroleum Corp. 1 Pinon Mesa, NE NE 34-33-12w, Long Hollow district, La Plata County, Colorado, which has been drilling at intervals since 1930, was plugged and abandoned the past week at a total depth of 3,678 ft., having tested the McElmo formation. It had traces of oil at several horizons with a show at 785 ft. and at 2,865-69 ft., with only one water sand at 820-46 ft. The surface pipe and 777 ft. of 6¼-in. were left in the hole.

COLORADO COMPLETIONS

Rangely, Rio Blanco County: Equity Oil Co. 15 Emerald, CNL NE NE 25-2n-103w, T.D. 1,845 ft., dry.

WYOMING COMPLETIONS

Byron, Big Horn County: Ohio Oil Co. 3 Sidon Canal, NW SE SW Lot 40-56n-97w, T.D. 5,338 ft., 7-in. 5,217 ft., pumped 325 bbl. a day, Tensleep.

Grass Creek, Hot Springs County: Ohio Oil Co. 74 Mills, CSL SW SW 20-46n-98w, T.D. 4,512 ft., cemented 559 ft. perforated 4¾-in. liner on bottom, 7-in. 4,171 ft., pumped 150 bbl.

Oregon Basin, Park County: Husky Refining Co. 3 Nielson, NW SW NW 33-51n-100w, T.D. 3,597 ft., top Embar 3,535 ft., 8⅝-in. 3,560 ft., 600 bbl.

MONTANA COMPLETIONS

Bowdoin, Phillips County: Montana-Dakota Utilities 708, SW NE NW 7-32n-34e, T.D. 985 ft., Bowdoin sand 735-95 ft., Phillips sand 915-55 ft., 734,000 cu. ft. gas, 250 lb. S.I. pressure.

Montana-Dakota 704, near C SE 6-32n-34e, T.D. 1,104 ft., Bowdoin 855-915 ft., Phillips 1,025-70 ft., 416,000 cu. ft. gas, 290 lb. pressure.

Montana-Dakota 703, C SE 8-32n-34e, T.D. 1,083 ft., Bowdoin 823-80 ft., Phillips 995-1,045 ft., 648,000 cu. ft. gas, 225 lb. pressure.

Montana-Dakota 701, C SE 10-32n-34e, T.D. 1,045 ft., Bowdoin 785-845 ft., Phillips 975-1,015 ft., 584,000 cu. ft. gas, 225 lb. pressure.

Montana-Dakota 702, C SE 9-32n-34e, T.D. 1,100 ft., Bowdoin 825-85 ft., Phillips 1,015-58 ft., 5½-in. 817 ft., 584,000 cu. ft. gas, 225 lb. pressure.

Cedar Creek, Fallon County: Montana-Dakota 159, C SW 31-6n-61e, T.D. 875 ft., in Judith River formation, 400,000 cu. ft. gas, 184 lb. pressure.

Montana-Dakota 160, C SW 1-5n-60e, T.D. 840 ft., 396,000 cu. ft. gas, 172 lb. pressure.

Montana-Dakota 163, C SW 19-5n-61e, T.D. 727 ft., 260,000 cu. ft. gas, 180 lb. pressure.

Kevin-Sunburst, Toole County: Texas Pacific C. & O. Co. 15 Pewters, NE SW NE 21-35n-2w, T.D. 1,521 ft., dry, P.B. to contact at 1,470 ft.

Pfabe & Engleking 2 Danielson, CSL NE NE 20-35n-1w, T.D. 1,435 ft., stray sand 1,423-35 ft., 10-day average 12 bbl.

Casper T. Olen 13 Engamoen, NE SW NW 14-35n-2w, T.D. 1,628 ft., contact 1,608-20 ft., 10-day average 10 bbl.

Nepstad Oil Co. 4 Dipple, NW SW NW 28-35n-1w, T.D. 1,508 ft., contact 1,505-08 ft., P.B. to stray sand at 1,393-1,414 ft., dry.

MICHIGAN OPERATIONS

Michigan Seeks Closer Spacing In Southwestern Counties

By OTTO C. PRESSPRICH

SAGINAW, Mich. — The federal petroleum coordinator was asked last week by P. J. Hoffmaster, state supervisor of wells, to permit drilling of wells closer together in six southwestern Michigan counties so that more oil may be recovered to help meet the demand for increased production. Federal regulations, enacted to conserve steel, set the drilling pattern to one well per 40 acres. Mr. Hoffmaster asked for a blanket exception for a 20-acre pattern that eventually could be redesigned to allow one well on every 10 acres when steel again becomes available. The petition, filed at the request of the state oil advisory board, involves Allegan, Barry, Kalamazoo, Kent, and Van Buren counties.

"Wells in those counties usually are less than 2,000 ft. in depth, are drilled quickly, do not require much steel and produce oil sooner," Mr. Hoffmaster pointed out. He said a hearing would be called as soon as the coordinator replies to the petition.

The advisory board authorized drilling of two wells on 40 acres in the Reed City field, provided the wells are sunk to different producing levels. Mr. Hoffmaster said approval had been given a Gulf Refining Co. application to drill one well to the Monroe formation and another to the Traverse, that the plan was being substituted in place of dual recovery and would apply to the entire Reed City field. The board also has mapped a program of pipe recovery in abandoned wells in cooperation with the Oil and Gas Association of Michigan.

Michigan's October oil production quota has been set at 65,700 bbl. a day, 1,000 bbl. less than the September quota, and Mr. Hoffmaster declared prospects are that the federal request can be met for the first time in several months. New production from recent discoveries is the basis for the well supervisor's prediction.

Drilling permits were issued by the conservation department last week for 14 locations in nine counties to bring the total of permits for the year to 422. Three permits went to Van Buren County, two each to Gratiot, Mecosta, and Ottawa, and one each to Antrim, Arenac, Kent, Lake, and Missaukee.

Michigan operators completed 16 tests last week, six for new oil production totaling nearly 600 bbl. daily initial potential. Nine of the tests were dry holes, four being wildcat ventures in Allegan, Watson and Wayland townships, Allegan County. One additional natural gas producer was completed and in another instance a well which made some production in the Traverse was temporarily abandoned after being deepened nearly 1,000 ft. more.

Three of the new oil wells are in the Monitor-Kawkawlin field of Bay County. They were of the usual productivity. Best of the completions was the Daily Crude Oil Co. 1 Schuett in Clare-Winterfield, completed at 3,779 ft. and flowing 305 bbl. in the first 18 hours.

MICHIGAN COMPLETIONS

Allegany County, Allegan Township: Lester Harris 1 Germain, NW NW NW 2-2n-13w, wildcat, dry, T.D. 1,750 ft.

R. E. Bradley 1 Adams et al, NW NE NE Sec. 27, wildcat, acidized after show of oil, dry, T.D. 1,433½ ft.

Watson Township: Sprenger Brothers 1 Pierce, S½ SE NW 12-2n-12w, wildcat, dry, T.D. 1,667 ft.

Wayland Township: H. C. Williams 1 May, S½ SW SE 32-3n-11w, wildcat, dry, T.D. 1,855 ft.

Arenac County: Clayton Township: Swanson Consolidated Oil Co. 1 Metzger, SE NE SE 5-20n-4e, show of oil, dry, T.D. 4,002 ft.

Deep River Township: Arenac Oil & Gas Co. 1 Parmalee et al, SW NE SE 7-19n-4e, dry, T.D. 1,557 ft.

Bay County: Kawkawlin Township: United Drillers & Producers, Inc. 1 Pressler, N½ SW NW 28-15n-4e, pumping 52 bbl., acidized, T.D. 2,978 ft., P.B. 2,957 ft.

Talbot Oil Co. 1 Schaub, S½ NE SE Sec. 28, pumping 21 bbl., acidized, T.D. 2,939 ft.

Monitor Township: Basin Oil Co. 2 Prevost, N½ SW SE 2-14n-4e, pumping 45 bbl., acidized, T.D. 2,868 ft.

Clare County, Winterfield Township: Daily Crude Oil Co. 1 Schuett, W½ SW SW 18-20n-6w, 305 bbl. natural, first 18 hr., T.D. 3,779 ft.

Lake County, Elk Township: Ohio Oil Co. 1 Fairbanks, S½ SW NE 11-20n-14w, wildcat, dry, T.D. 3,938 ft.

Missaukee County, Riverside Township: Taggart Brothers Co. 58 Ward et al, SW 24-21n-7w, dry, T.D. 1,437 ft.

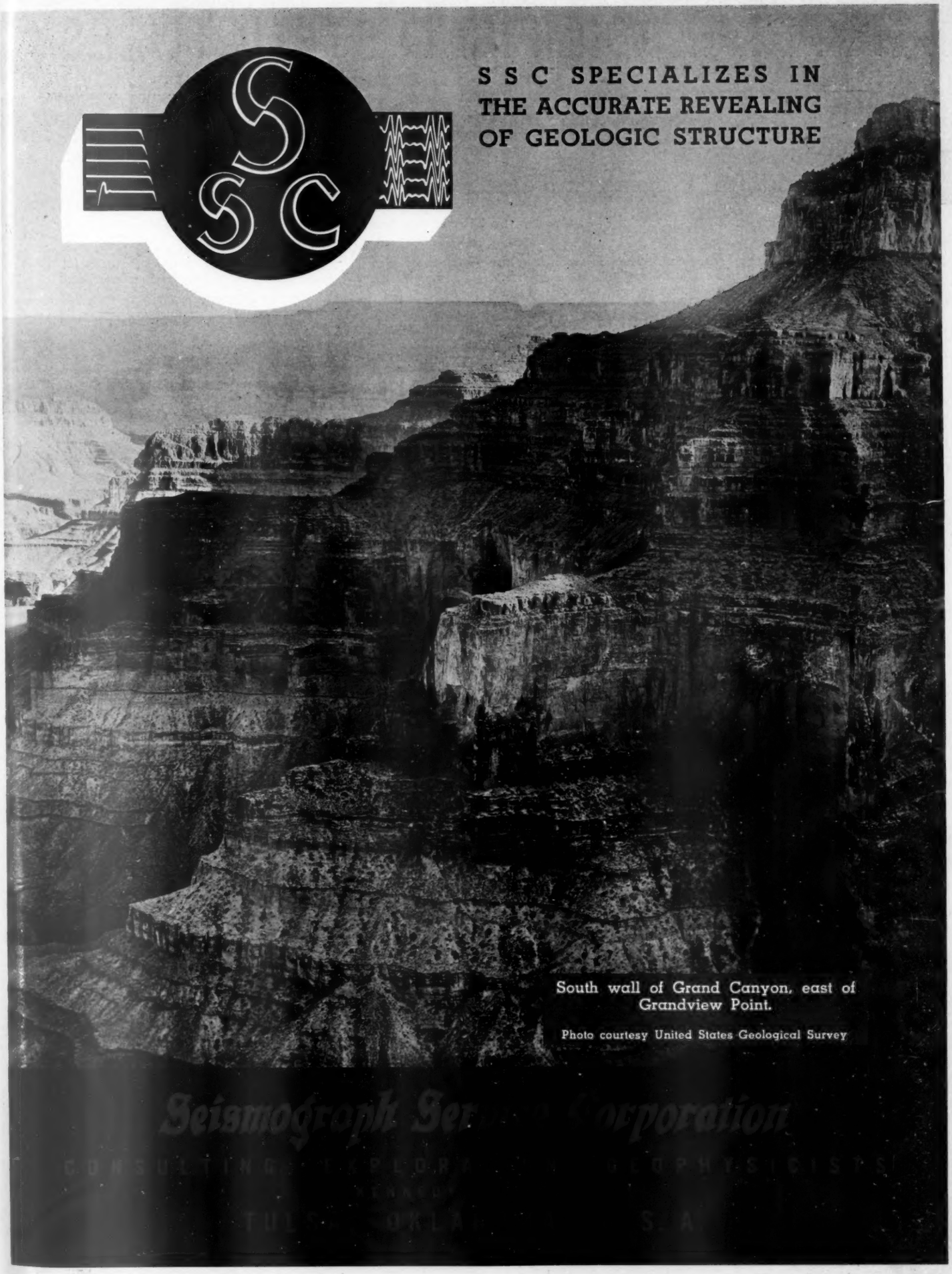
Taggart Brothers Co. 65 Young-Smith et al, NE Sec. 29, dry, T.D. 1,415 ft.

Monroe County, Dundee Township: Consolidated Developers B-2 Bragg, SE NW SW 30-6s-6e, deepened from 2,154 ft. and temporarily abandoned at 3,088 ft.

Montcalm County, Belvidere Township: Belvidere Oil Co. 1 Chapman communitized, NE NW SE 17-12n-7w, 4,032,000 cu. ft. gas, T.D. 1,266½ ft.

Osceola County, Richmond Township: Ohio Oil Co. 2 Walker, N½ NE NW 18-17n-10w, flowing 20 bbl. and salt water, acidized, T.D. 3,569 ft.

Van Buren County, Bloomingdale Township: H. G. Williams 2 Geldon, S½ SW SW 12-1s-14w, 50 bbl. and salt water, acidized, T.D. 1,288 ft.


S S C SPECIALIZES IN
THE ACCURATE REVEALING
OF GEOLOGIC STRUCTURE
South wall of Grand Canyon, east of
Grandview Point.
Photo courtesy United States Geological Survey

TYPICAL OIL-FIELD STRUCTURES

Unconformities

Zenith, Wherry and Hollow-Nikkel Fields, Kansas

(Compiled by The Oil and Gas Journal)

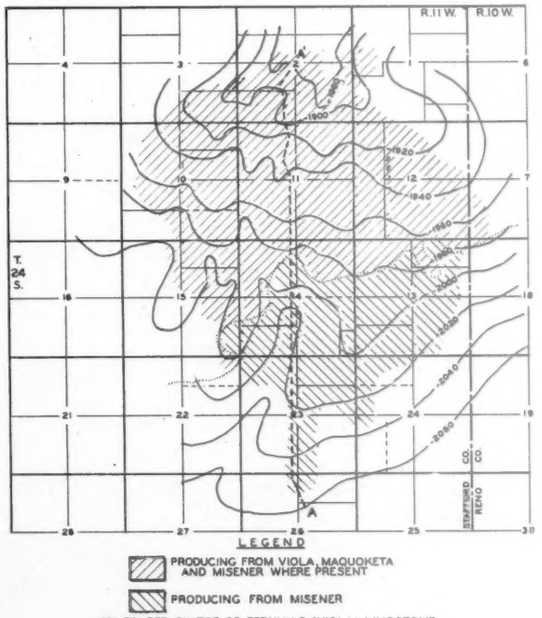
GENERAL GEOLOGY: The Central Kansas uplift is a regional high which bounds the Dodge City or Anadarko basin on the north. It was uplifted at various times during the Paleozoic, possibly along with a much larger area at many times, as some of the unconformities present on the ridge are continuous throughout large sections of the Mid-Continent area. The major unconformity is at the top of the Mississippi lime, marking the greatest uplift and the arch persisted from this time onward, although it took part in regional submergences during the Pennsylvanian, Permian, and part of the Cretaceous.

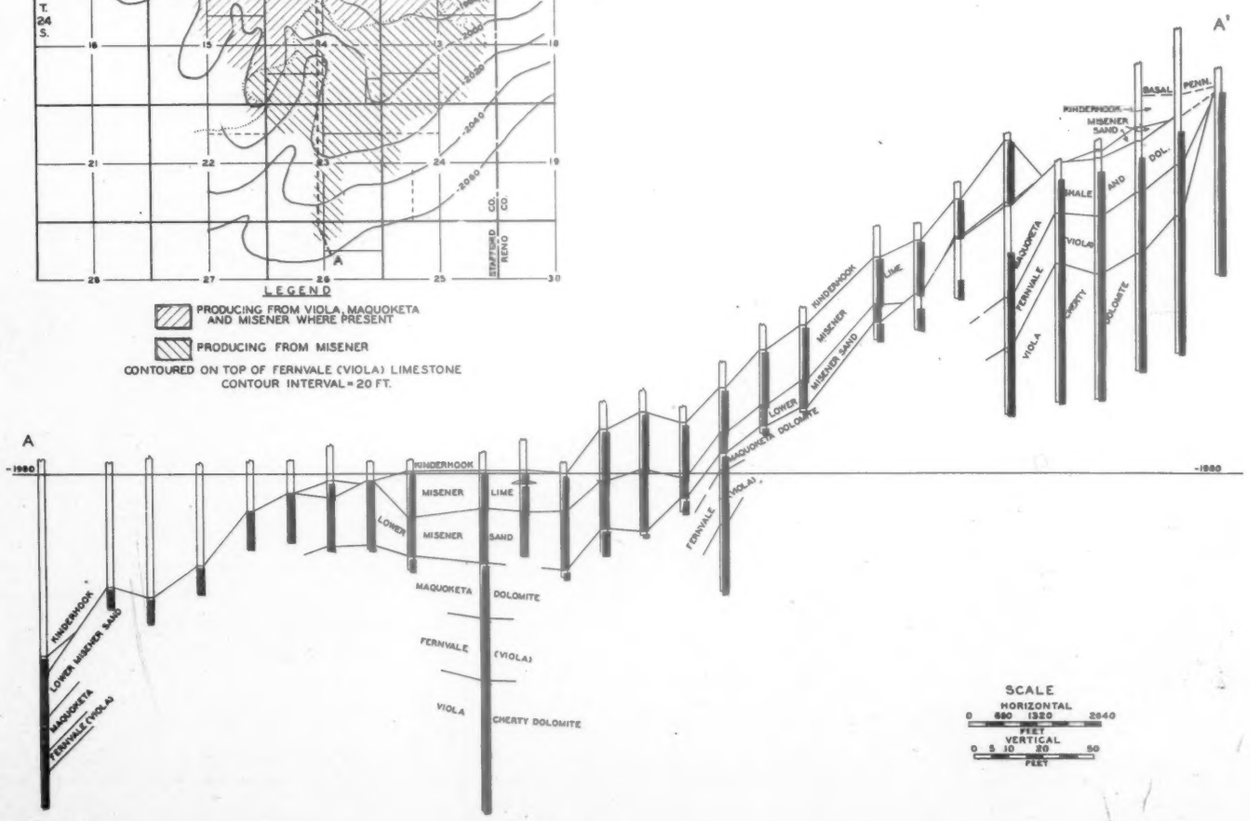
OIL-BEARING HORIZONS: The reservoirs in the many fields found on the uplift are associated with unconformities. The oldest is the granite wash on the core of the arch followed by the Arbuckle limestone, the Viola limestone and Misener sand, the Hunton lime, the Mississippi lime the Sooy or basal Pennsylvanian conglomerate, the Kansas City-Lansing and others.

STRUCTURE: In places, such as at Nikkel and Voshell the accumulation of oil takes place along uplifts dissected by a fault; in others, as at Zenith, accumulation is on a nose; at Wherry there is some evidence of terracing, which might be considered as a tilted anticline or buried hill. In many of the fields, particularly the larger ones along the crest of the arch, there is little evidence of local structure, and in all cases the accumulation is governed more by porosity within the reservoir than by the structure itself.

EXPLORATION METHODS: The fields on the Central Kansas uplift represent almost every type of depositional and unconformity trap so that every field in which the accumulation is not strictly structural has at least some features in common with them. The relatively shallow depth at which

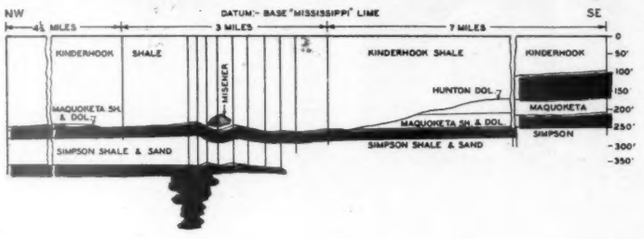
Left: Map of the Zenith oil field, Stafford County, Kansas, showing the relationship between local structure and production. Below: Cross-section from north to south through the Zenith field

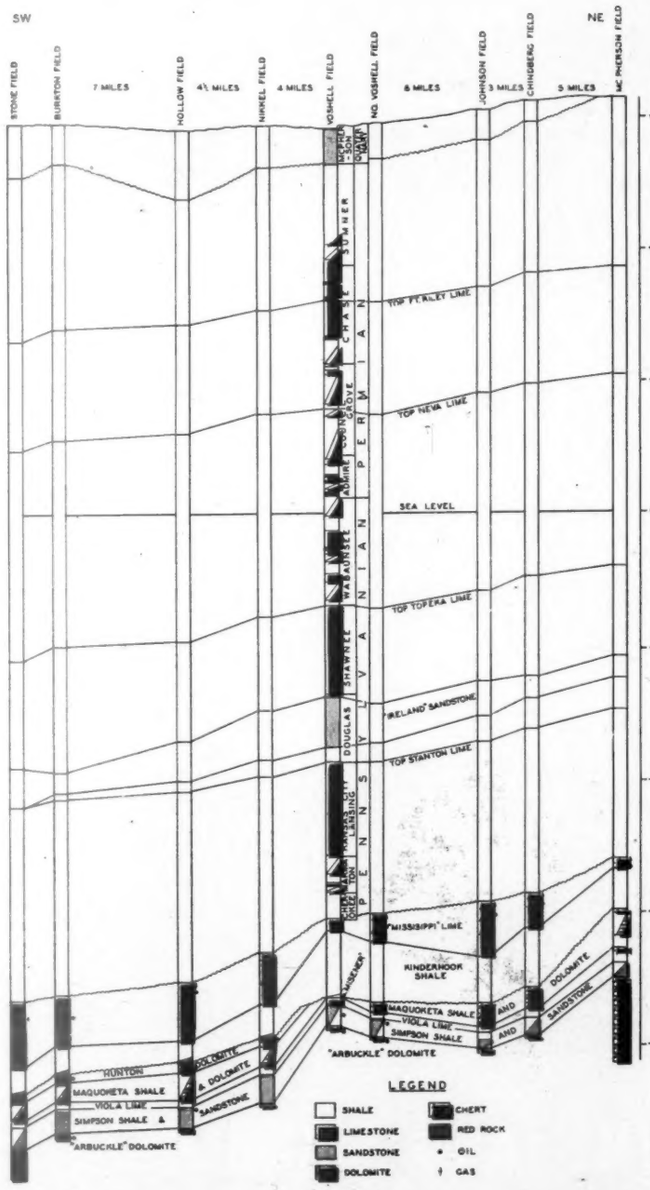


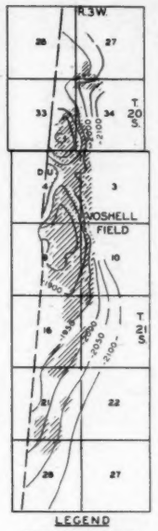


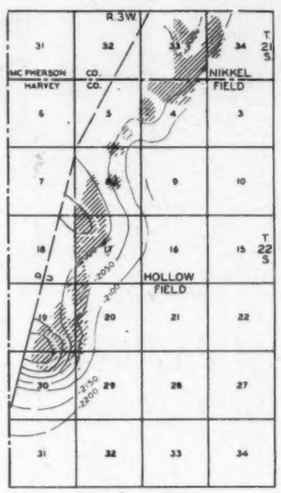
these fields are found and the large number of pays has encouraged drilling to an extent equalled by few other areas of comparable size. Practically all of this drilling has taken place within the past 10 years so that modern records usable in present-day exploration are available. These factors combine to make this district a laboratory in which material is available for study so that every relationship between production and geological and geophysical indications can be examined in detail. The most effective method of discovering oil fields in this area has been to explore minor structural irregularities on subsurface key beds. Random drilling has also been of considerable value. If the discovery of stratigraphic traps is ever to become as efficient as the discovery of structural traps the Central Kansas uplift will probably provide the basis for the development of the methods to be used.

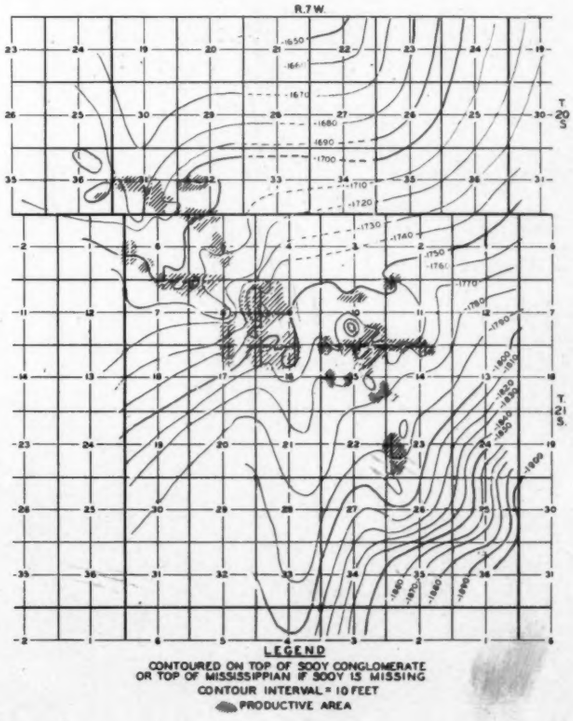
Principal references: ***Arnold S. Bunte and Leo R. Fortier, Nikkel Pool, McPherson and Harvey Counties, Kansas. Stratigraphic type oil fields, pp. 105-17, Harold E. McNeil, Wherry pool, Rice County, Kansas, idem 118-38. W. C. Imbt, Zenith pool, Stafford County, Kansas—An example of Stratigraphic Trap Accumulation, idem pp. 139-65.***







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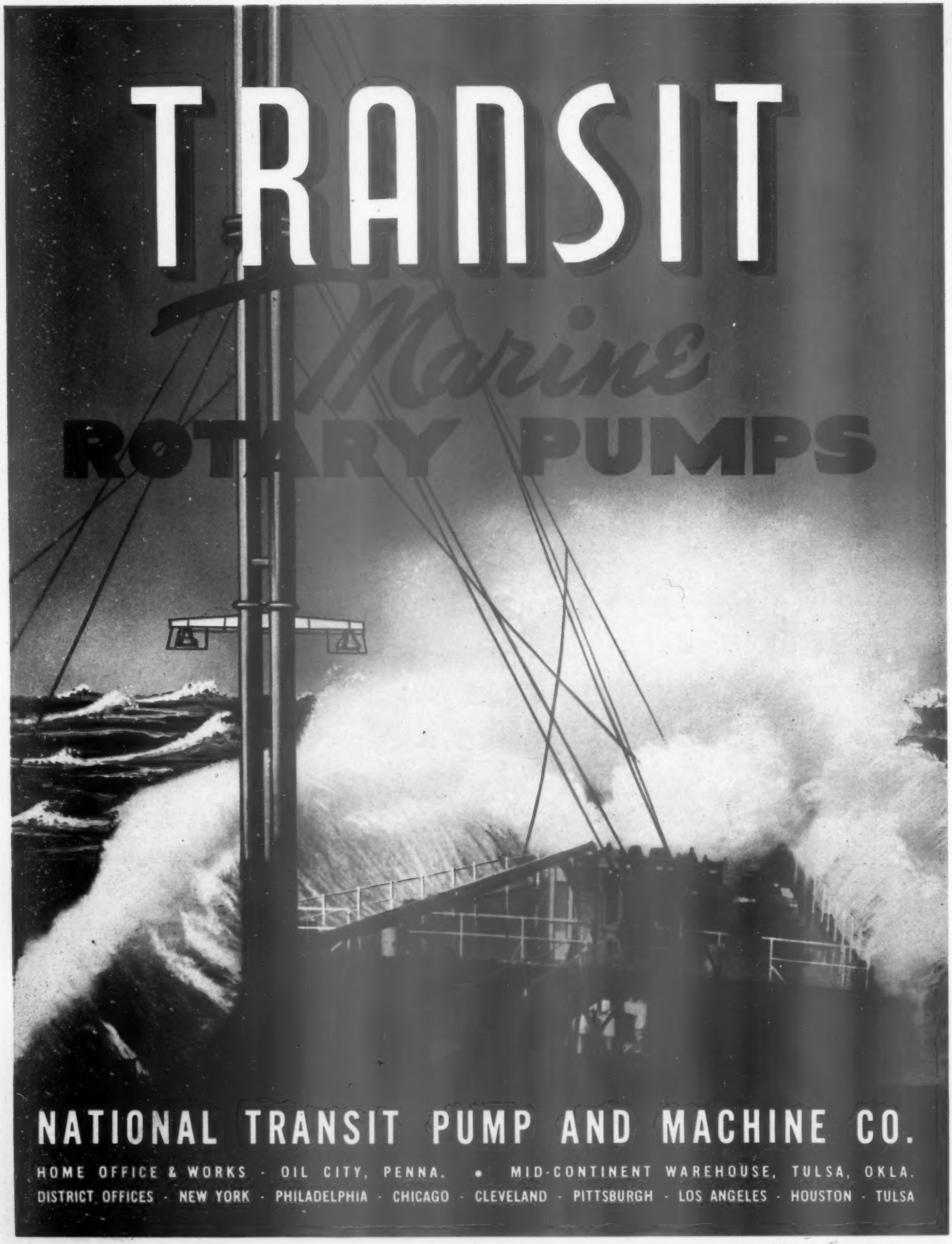
CONTOURED ON TOP OF SOOY CONGLOMERATE OR TOP OF MISSISSIPPIAN IF SOOY IS MISSING
CONTOUR INTERVAL = 10 FEET
PRODUCTIVE AREA

Left above: ***Cross-section near center of Voshell field showing structure and topography at beginning of Kinderhook deposition. Below: Section along the Voshell trend. Right above: Maps of the Voshell and Hollow-Nikkel fields showing relationship of production to structure. Below: Map of the Wherry field showing relationship of production to structure***



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KANSAS, NEBRASKA

Small Mississippian Chat Pool Opened in McPherson County

By CARL HOOT

DEVELOPMENT in Kansas over the past week included one pool opener in McPherson County and several wildcats reporting a show of oil. Two miles southeast of the Henne pool and near the town of Roxbury, Westgate-Greenland Oil Co. 1 Crowther, S½ NW NW 26-17-1w, made initial potential of 150 bbl., natural, from Mississippian chat at 2,782-2,802 ft. Four miles southwest of the 1 Crowther and 1½ miles south of the Roxbury pool, the same company had encouraging oil shows in chat topped at 2,656 ft. Total depth was 2,662 ft. The well is 1 Lilly, S½ SW SE 30-17-1w.

Latest wildcat drilling reports indicated a continued upswing in operations. Cities Service 1 Orange, N½ NW SE 31-18-1w, 4 miles northwest of Canton and 2 miles northeast of the Ritz-Canton pool of McPherson County was dry in chat at 3,050 ft. In Barber County, 4 miles east of the Sun City pool, Great Lakes Carbon Corp. 1 Werner, SE SE 20-30-14w, had a show of oil in Simpson sand at 4,572-80 ft. The well was shot and operators were cleaning out for a production test. Of special interest to operators is Continental's wildcat in Rooks County, 3 miles south of the new Barry pool, also opened by Continental. Located in NE cor. of 25-8-19w, 1 Baumgartner found a show of oil from 3,480-87 ft. in lime and was drilled to 3,682 ft. in Arbuckle dolomite, which was dry. Casing has been set at 3,546 ft. at the base of the Lansing for a test of that formation.

KANSAS COMPLETIONS

Wildcats

Barber County: Barbara O. & G. 1 Ott, NE NW 22-33s-14w, dry at 5,226 ft., Topeka 3,150 ft., Lansing 4,085 ft., Mississippian 4,628 ft., Viola 4,923 ft., Simpson 5,093 ft., Arbuckle 5,193 ft.

Hodgeman County: Fain Drlg. (Stanolind farmout) 1 H. J. Baldrey, SW SW SE 4-23s-22w, abandoned at 20 ft.

Jefferson County: McLaughlin 2 S. S. Miller, W½ NE SE 32-8s-20e, dry at 1,535 ft., Oread 85 ft., McLouth 1,395 ft., Mississippian 1,463 ft.

McPherson County: Westgate-Greenland Oil 1 Messenger, S½ SW NE 5-18s-1w, dry at 2,725 ft., Lansing 2,130 ft., Mississippian 2,695 ft.

Marion County: Ward McGinnis 1 Loveless, SE SE SW 12-19s-4e, dry at 2,640 ft., Mississippian 2,281 ft., Hunton 2,475 ft., Viola 2,610 ft.

Pratt County: Hannum Drlg. et al 1 Taylor, NW NW NE 19-26s-13w, dry at 4,580 ft., Topeka 3,300 ft., Lansing 3,782 ft., Viola 4,265 ft., Misener 4,321 ft., Simpson 4,430 ft., Arbuckle 4,519 ft.

Fields

Bemis, Ellis County: Cities Service 1-J Hall, NW NE NW 35-11s-17w, pumped 85 bbl. oil and some salt water in 8 hr., 2,000 gal. acid, Arbuckle 3,539 ft., pay 3,541-75 ft., T.D. 3,575 ft.

Burrton, Harvey County: Carl Hipple 5 Martindale, S½ NW SE 18-23s-3w, 100 bbl., 1,000 gal. acid, Mississippian 3,262 ft., pay 3,356-60 ft., T.D. 3,364 ft.

Chase, Rice County: McPherson Drlg. 1-C Grizzell, SW SE SW 5-19s-9w, 100 bbl., 5,000 gal. acid, Lansing 2,893 ft., pay 2,905-11 ft., T.D. 3,317 ft.

Eberhardt, Rice County: J. H. Tatlock 2 Bernstorf, N½ SW NW 30-19s-10w, dry at 3,333 ft., Lansing 3,022 ft., Arbuckle 3,318 ft.

Eckles, West, Butler County: Adair & Morton et al 1 Dixon, W½ SE NE 14-27s-6e, dry at 3,151 ft., Lansing 1,750 ft., Kansas City 2,060 ft., Mississippian 2,745 ft., Simpson 3,146 ft., Arbuckle 3,148 ft.

Greenvale, Russell County: Texas 3 Borrell, S½ SE SE 32-14s-12w, 276 bbl., natural, Gorham sand 3,168 ft., pay 3,168-70 ft., T.D. 3,170 ft.

Hall-Gurney, Russell County: Stanolind 1 Lipprand, NW NW NW 2-15s-13w, dry at 3,416 ft., Topeka 2,641 ft., Lansing 2,946 ft., Arbuckle 3,262 ft.

Iuka, East, Pratt County: Skelly 1 Katie Beck, SW NW NW 7-27s-12w, 1,179 bbl., 1,000 gal. acid, Simpson 4,240 ft., pay 4,253-54 ft., T.D. 4,260 ft.

Kraft-Prusa, Barton County: Bartkett & Crumm 1-B Staatz, NW NW SW 23-17s-11w, 1,270 bbl. oil and 81 bbl. water, 3,000 gal. acid, Arbuckle 3,297 ft., pay 3,298-3,313 ft., T.D. 3,313 ft.

Laton, Rooks County: Markfield Oil 2 Baxter, S½ NW SE 2-9s-16w, pumped 28 bbl. in 8 hr., 1,500 gal. acid, Lansing 3,170 ft., pay 3,210-49 ft., T.D. 3,210 ft.

Lost Spring, Marion County: Sunflower Oil 3 Myers, W½ NW NW 26-17s-4e, 45 bbl., natural, Mississippian 2,356 ft., pay 2,363-2,429 ft., T.D. 2,429 ft.

Ring-Mac Oil 2 Henke, W½ SW NE 4-18s-4e, 264 bbl., natural, Mississippian 2,372 ft., pay 2,380-85 ft., T.D. 2,385 ft.

Merten, Barton County: Ollie Williams 1 Merten, SW SE 3-19s-15w, 234 bbl., natural, Lamotte sand 3,582 ft., pay 3,582-90 ft., T.D. 3,590 ft.

Orth, Rice County: Bay Pet. 1 Schultz, W½ SW SE 15-18s-10w, dry at 3,280 ft., Dodge 2,903 ft., Lansing 2,918 ft.

Ray, Phillips County: Cities Service 2 States, SW SW SE 30-5s-20w, 1,544 bbl., natural, Lamotte sand 3,627 ft., pay 3,629-35 ft., T.D. 3,635 ft.

Smyres, Rice County: Continental 1 Esther Wendt, W½ SW NE 25-19s-6w, 428 bbl., natural, Mississippian 3,419-54 ft., T.D. 3,454 ft.

Trapp, Russell County: Stanolind 3-B Letsch, S½ NE SW 4-15s-13w, 221 bbl., 3,100 gal. acid, Lansing 2,966 ft., pay 2,996-3,004 ft., T.D. 3,004 ft.

Vernon, North, Sumner County: E. B. Shawyer 1 Callender, SW SW 9-35s-2e, 50 bbl., natural, Mississippian 3,357 ft., pay 3,385-91 ft., T.D. 3,405 ft.

OHIO, INDIANA, KENTUCKY

New Gas Field Opened West Of Orville, Wayne County

ZANESVILLE, Ohio.—A new gas area has been opened in eastern Wayne County: A wildcat test 2 miles west of Orville makes a fair gas showing in the Clinton horizon. Hanley & Bird 1 Joseph Shrock, Section 23, Green Township, gaged 470,000 cu. ft. gas naturally; a shot increased the flow to 660,000 cu. ft., shut-in gage. Two streaks of Clinton were logged, 3,643-3,663 ft. and 3,683-3,710 ft. with most of the gas being found in the top streak. The Newburg sand at 3,147-3,200 ft. also made a gas (sweet) showing, gaging 210,000 from pays at 3,147 ft. and 3,195 ft. The total depth was 3,743 ft.

Lorain County yields a 2,500,000-cu. ft. Clinton sand gasser south of Wellington.

A 60-bbl. producer and a dry hole were reported in the Clayton pool.

OHIO COMPLETIONS

Athens County, Athens Township: Weimer & Ross 3 C. A. Colburn, Sec. 13, 1 bbl., Mitchell, T.D. 526 ft.

Carthage Township: Nuzum Bros. 2 J. R. Fish, Sec. 34, show oil shot, dry, Berea, T.D. 1,771 ft.

Rome Township: Anderson et al 2 P. R. Russell, Sec. 31, 350,000 cu. ft. gas, Keener, T.D. 998 ft.

Coshocton County, Tiverton Township: Ohio Fuel 1 Robert Putman, Sec. 7, dry, Clinton, T.D. 3,282 ft.

Fairfield County, Berne Township: City Natural 1 M. Kellengerger, Sec. 11, 60,000 cu. ft. gas, Clinton, T.D. 2,262 ft.

Holmes County, Knox Township: Ohio Fuel 1 Chas. Derr, Sec. 20, 600,000 cu. ft. gas, shot, Clinton, T.D. 3,027 ft.

Knox County, Butler Township: Upham Gas 2 J. W. Fry, Lot 10, dry, Clinton, T.D. 2,918 ft.

Mary Ann Township: Pat O. & G. Co. 511 Newton et al, Sec. 6, 1 bbl., Berea, T.D. 652 ft.

Licking County, Hopewell Township: Pure 3 Sam Guthrige, Sec. 23, dry, Clinton, T.D. 3,115 ft.

Pure 4 John Drum, Sec. 23, dry, Clinton, T.D. 3,145 ft.

Lorain County, Columbia Township: Ohio Fuel 1 Luella Adams, Lot 86, 1,500,000 cu. ft. gas, Clinton, T.D. 2,642 ft.

Wellington Township: Glen Harmon 1 Fred Bradley, Lot 1, 2,500,000 cu. ft. gas, shot, Clinton, T.D. 2,443 ft.

Morgan County, Marion Township: Henry et al 14, Thos. Hoopes, Lot 5, 3 bbl. shot, first Cow Run, T.D. 375 ft.

York Township: Ohio Fuel 1 Hiram Walker, Sec. 27, dry, Clinton, T.D. 4,281 ft.

Muskingum County, Blue Rock Township: Industrial Gas Corp. 3 Wm. Lilienthal, Sec. 4, 300,000 cu. ft. gas, shot, Clinton shell 4,355-71 ft., Clinton 4,400-32 ft., dry, Medina 4,486-94 ft., flowed 20 bbl. after shot.

Noble County, Noble Township: Fassett Oil Co. 11 John Hayes, Sec. 34, dry, T.D. 240 ft.

Jackson Township: George White et al 1 Emmett Way, Sec. 14, dry, Keener, T.D. 1,252 ft.

Perry County, Clayton Township: Preston Oil 2 John J. Wilson, Sec. 5, 60 bbl. shot, Clinton, T.D. 3,328 ft.

Madison Township: Preston Oil 1 C. L. Holbein, Sec. 33, dry, Clinton, T.D. 3,386 ft.

Thorn Township: Ohio Fuel 1 Fred Gordon, Sec. 35, show gas, shot, plugged, Clinton, T.D. 2,787 ft.

Palm Oil Corp. 2 H. Long, 95 bbl., Clinton, T.D. 2,738 ft.

Washington County, Barlow Township: Baker et al 1 H. Woodburn, Sec. 10, 50,000 cu. ft. gas, Stray, T.D. 1,310 ft. (old well deepened).

Perdew et al 1 Lonnie Perdew, Sec. 2, show gas, plugged, Maxon (water), T.D. 1,481 ft.

Wesley Township: D. T. Orndoff 1 B. Graham Fraction 34, dry, Maxon (water), T.D. 1,155 ft.

Aurelius Township: G. F. Warren 1 fee, Sec. 18, dry, Stray, T.D. 585 ft.

Gallia County, Cheshire Township: Code et al 1 Gerlie Gordon, 50,000 cu. ft gas, second Berea, T.D. 1,750 ft.

Guernsey County, Wheeling Township: Ohio Fuel Gas Co. 1 L. H. Jackson, 667,000 cu. ft. gas, lime, T.D. 3,480 ft.

Medina County, Medina Township: Joe Biro 1 C. C. Kenyon, Sec. 30, 5 bbl., Berea grit, T.D. 535 ft.

INDIANA

EVANSVILLE, Ind.—Sells Petroleum had a production gage of 52 bbl. of oil in 8 hours from the 1-A McCarty unit, SW NE NW 32-6s-11w, Vanderburg County. Production at the 1-A McCarty unit is from the Waltersburg sand at 1,737-45 ft. with the hole bottomed at 1,745 ft. The well is producing naturally without shot. Meanwhile, same operators have set pipe at the 2 J. A. McCarty, SE NW NW 32-6s-11w, to test the Waltersburg sand at 1,754-57 ft. The well will be deepened with cable tools and completed. Tools are also being moved on location for 2 J. A. McCarty unit, NE NE NW 32-6s-11w.

INDIANA COMPLETIONS

Dubois County: H. C. Detrick 2 Fleig, 410 ft. from S line and 410 ft. from W line, NE SE 9-3s-4w, dry at 370 ft., Tar Springs sand 349-70 ft.

Harrison County: Harrison Dev. 1 Halliday, SE SE 4-6s-6e, dry at 2,000 ft., Trenton 1,770 ft.

Spencer County: R. Hal Compton 8 Stewart, SW SW SW 37-6s-5w, location abandoned.

Miller & Shiarella 1 A. West, SW NW SW 33-6s-7w, dry at 1,012 ft., Menard 931 ft., Waltersburg 1,003 ft.

Sullivan County: Ohio Oil 1 Hayden, SW SW 3-8n-10w, pumped 60 bbl. oil and 30 bbl. water, 5,000 gal. acid, reacidized 1,000 gal., Ste. Genevieve 1,087 ft., pay 2,392-2,414 ft., T.D. 2,414 ft.

J. H. Gilliam 1 H. Sinclair, NE SE 3-8n-10w, dry at 2,567 ft., Chattanooga 2,200 ft., Devonian 2,390 ft.

EASTERN KENTUCKY

ASHLAND, Ky.—A substantial increase in eastern Kentucky gas production was recorded today with the completion of three gas wells. A combined open flow of 2,414,000 cu. ft. of gas daily was reported from the three completions, while a number of other wells are near the shooting stage.

Operations in some of the fields have shown a slight increase recently while drilling of certain key wells has indicated expansion of activities in some of the areas. Cumberland Petroleum and the Bed Rock Co. have completed key wells in Magoffin County, and while the data is not available here it is believed that drilling is being centered on oil production, especially in the Litteral Fork area. Activities have also stepped up in the Wolf Creek region in Martin County, according to information reaching Ashland.

EASTERN KENTUCKY COMPLETIONS

Knott County: Kentucky-West Virginia Gas Co. 5411 Abrigal Hall, Caney Fork, 910,000 cu. ft. gas open flow after shot, T.D. 2,888 ft., in shale.

Pike County: Kentucky-West Virginia Gas Co. 605 D. W. James, Johns Creek, 292,000 cu. ft. gas open flow after shot, T.D. 2,725 ft. in shale.

Kentucky-West Virginia Gas Co. 698 Guff B. Weaver, Johns Creek, 1,212,000 cu. ft. gas open flow after shot, T.D. 2,835 ft. in shale.

NORTH LOUISIANA, ARKANSAS

Catahoula Parish May Have New Sparta Sand Pool

SHREVEPORT, La. — A shallow Sparta sand discovery for the middle Wilcox trend in North Louisiana was indicated the past week with the showing of Eugene Jordan 1 Louisiana Central Lumber Co., a wildcat located 9 miles west of the town of Harrisburg in Catahoula Parish. This well was drilled to the Wilcox at 4,554 ft., and casing was cemented after side-wall coring showed possible production. Casing was perforated opposite sand at 1,810-17 ft. and the well is being rigged up to pump after it swabbed heavy black oil. The well was shut in over night and the hole filled 400 ft. with oil.

NORTH LOUISIANA COMPLETIONS

Wildcat, Avoyelles Parish: H. L. Hunt 1 Hines, SW SW 11-4n-4e, dry, T.D. 7,311 ft.

Wildcat, Caddo Parish: H. C. Owens et al 1 Wilkinson, NE NE 34-23n-15w, dry, T.D. 6,010 ft., Stringer 4,730 ft., massive anhydrite 4,980-5,230 ft.

Wildcat, La Salle Parish: O. M. Poynter 1 Heard, SW SE 13-8n-3e, dry, T.D. 3,634 ft., Wilcox 2,553 ft.

Haynesville, Claiborne Parish: Magnolia 1-B Lowe, NE NE 9-23n-8w, flowed 400 bbl., Pettit 5,333-45 ft., T.D. 5,367 ft.

Midstates 1 Taylor-Lowe, NE NW 10-23n-8w, flowed 203 bbl. in 6 hr., Pettit 5,318-30 ft., 5,378-82 ft., T.D. 5,390 ft.

Little Creek, La Salle Parish: O'Meara Bros. 4 Tremont, SE NW 24-9n-1e, flowed 252 bbl., perf. 2,470-72 ft., T.D. 2,675 ft.

Nebo, La Salle Parish: H. L. Hunt F-119 Goodpine, SE NW 28-7n-3e, pumped 10 bbl., Cockfield, T.D. 4,290 ft.

Urania, Grant Parish: Placid Oil 1 Matherson, NE NW 15-9n-1e, dry, T.D. 4,048 ft., Wilcox 1,543 ft.

ARKANSAS COMPLETIONS

Wildcat, Union County: Sam Kinard 1 Anthony, NE SE 18-19s-15w, dry, T.D. 2,924 ft., Wilcox 1,060 ft., Nacatoch 2,140 ft., Saratoga 2,315 ft.

Dorcheat, Columbia County: Phillips 1 Claudia, C S½ NW 13-18s-22w, flowed 113 bbl., Smackover 8,867 ft., perf. 8,922-36 ft., T.D. 9,010 ft.

Midway, Lafayette County: Barnsdall 4-A McClaine, NW NE 13-15-24w, flowed 180 bbl., Smackover 6,451 ft., T.D. 6,475 ft.

Stephens, Columbia County: G. H. Vaughn 2-B Smart, SE SE 11-15s-20w, pumped 37 bbl., Smart sand 3,431 ft., T.D. 3,470 ft.

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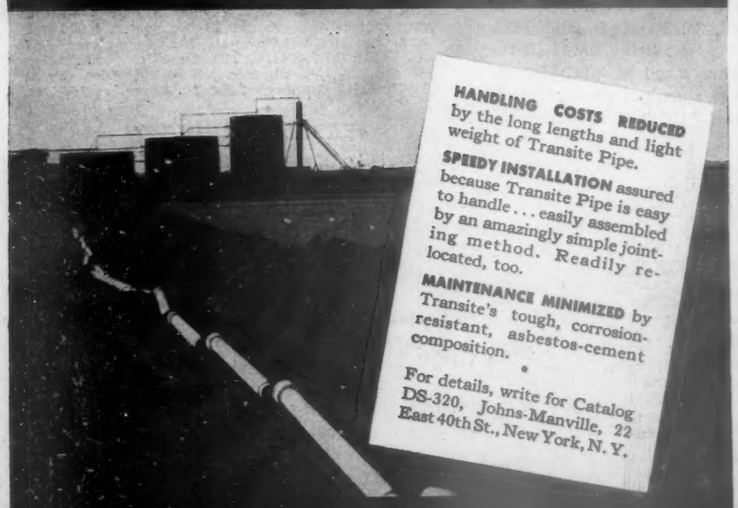

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CANADIAN FIELDS

North Turner Valley Test Drilling in Lower Benton

By VICTOR LAURISTON

CHATHAM, Ont. — In the North Turner Valley extension, Bonaventure Royalties 1, LSD 16, 24-21-4w5, has resumed from 6,365 ft. after sidetracking. This is now the most northerly active test in the field, with drill in the lower Benton formation. British Dominion 5, a joint test of British Dominion Oil & Development Co. and Home Oils, has been located in LSD 5, 17-21-3w5, ¼ mile north of Atlas-British Dominion 3, the most northerly producer. A second outpost test by British Dominion and associated interests will be drilled in LSD 8, 18-21-3w5, offsetting No. 5 to the west. Contracts for both wells will be handled by Drilling Contractors, Ltd. Northclonmel 1, LSD 16, 7-21-3w5, another outpost test west of production, got the grit-bed contact at 6,460 ft. and is drilling in upper Blairmore below 6,610 ft.

Devonian Test

On the west flank of the old Central Turner Valley field, site has been cleared for Devonian Test 1, LSD 2, 25-19-3w5, and actual drilling will be started as soon as necessary arrangements are completed with the federal government. Some 11 Turner Valley companies are participating in the test, which will be carried through the Madison limestone and Banff shale to test the underlying Devonian limestone. Location, close to Argus 1 producer, is expected to avoid the faulting which prevented McLeod 4 deep test from reaching the Devonian. Proceeds of production will be share pro rata among the participating companies.

Control Gas-Oil Ratio

Major Oil 8, LSD 13, 4-21-3w5, has worked out a method for controlling the gas-oil ratio. Test finished at 7,774 ft. with Madison at 7,270 ft. and with gas-oil ratio of 3,600 cu. ft., allowable was first set at 293 bbl. daily. A packer was set between the upper and lower zones, sealing off and controlling the heavy gas flow from the upper zone. On a 12-day production test, the gas-oil ratio was found to be down to 1,213 cu. ft. and new allowable was accordingly set at 529 bbl. daily.

Deep Test in North

North End Petroleum 3, LSD 4, 20-21-3w5, most northerly active test in the North Turner Valley area, is in upper Blairmore formation below 9,137 ft. This is the deepest test yet drilled in North Turner Valley.

Taber Field

In the Taber field, southern Alberta, Standard of British Columbia 1, LSD 9, 18-9-16w4, which swabbed 3,000 bbl. in 14 days from a horizon immediately above the lime, is being put on the pump for a definite production test. The well is the largest producer in Alberta outside Turner Valley. Major Oil Investments of Calgary has made two locations, Major 1 in LSD 12, 9-9-17w4, 5 miles west and 1 mile south of Standard 1, and Major 2, LSD 1, 11-9-17w4, 2½ miles southwest. Production is expected around 3,200 ft.

Vermilion Field

In the Vermilion field, eastern Alberta, Saskahead 1, LSD 7, 32-50-5w4, sponsored by an Indian Head, Sask., group, got the sand at 1,828 ft. with an indicated thickness of 8 ft. Electrolog survey has been made and casing cemented preparatory to drilling in. Production at this point extends the field more than ½ mile east and a little north of Princeville 2, the nearest producer. Vermilion Consolidated 12, a mile northwest of the Shane gasser, which failed to get production in the main sand at 1,800 ft., was plugged back to test an upper gas horizon at 1,573 ft. with indications of good flow and pressure. It will probably be finished as a reserve gasser for Franci Public Services, which supplies the town of Vermilion. West of the field, Northwest-Mannville 1, LSD 1, 18-50-8w4, has been abandoned at 2,435 ft. after testing a 5-ft. sand at 2,258 ft.

Bruderheim Test Abandoned

On the Bruderheim structure, 37

Statement of the Ownership, Management, Etc., of

THE OIL AND GAS JOURNAL

October 1, 1942

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Known bondholders, mortgagees and other security holders holding 1 per cent or more of the total amount of bonds, mortgages or other securities: None.

S. H. ROURKE,
Business Manager.

Sworn to and subscribed before me this 22nd day of September, 1942.

H. R. BARNETT,
Notary Public.

My commission expires October 3, 1945.

miles northeast of Edmonton, Clonmel Petroleums 1, LSD 4, 32-55-20w4, has been abandoned below 3,212 ft. Careful coring operations in the Cretaceous formation showed a continuous 450-ft. section with an extraordinary number of oil showings ranging from oil-stained sands to free oil. In every case, however, the sands lacked porosity. Further drilling may be undertaken.

Saskatchewan Operations

In southern Saskatchewan, a gas flow, encountered by the Lakeside Gas & Oil Syndicate near Lebret, tested 1,000,000 cu. ft. daily, but proved noninflammable. Samples have been sent to Ottawa to determine its possible value, and whether it has any helium content.

Oil Lease Cancellation

Proposed cancellation of petroleum and natural-gas rights of lessees in Alberta who failed to begin drilling by September 1, as proposed by the provincial government, would, it is estimated, affect 3,500 parcels of land aggregating some 800,000 acres. N. E. Tanner, minister of lands and mines, states: "It is the intention where the drilling requirements have not been met to cancel the lease, but the former lessee will have the opportunity for a limited time, of obtaining a lease of his former location under the existing regulations upon payment of any outstanding rentals or other charges and a fee. The fee will be $10 where the lease comprises a section or less in area and $25 where the area is in excess of a section. The lessee who accepts a lease under these conditions will be given to April 1, 1944, for the commencement of drilling operations on his location, or if in wildcat territory for contribution to the cost of a well being drilled in the vicinity of his holdings as provided in the regulations."

Ontario Completions

Probably the most significant development in recent Ontario drilling is the encountering of the first commercial gas production in South Norwich Township, Oxford County, where a test by William Coates in Lot 2, Concession 11, finished at 1,125 ft. with 120,000 cu. ft. daily. Production horizon is considerably deeper than in the old Brownsville field, and may be in the Clinton formation, indicating possibility of a new Clinton field. Gas has also been encountered in the Clinton formation in Union Gas 92, Lot 17, Concession 1, Malahide Township, close to Lake Erie; production was only about 30,000 cu. ft. and the well was abandoned at 1,575 ft. This is the most westerly point at which Clinton gas has been encountered, production in Malahide heretofore being from the shallower Guelph-Niagara; the nearest producing areas are around Richmond and Lakeview, in Bayham Township, about 7 miles farther east.

APPALACHIAN FIELDS

Test in Clay District, West Virginia, Resumes Drilling

PITTSBURGH, Pa.—In the lower eastern fields daily oil production increased to a considerable extent over that of the previous week.

SOUTHWEST PENNSYLVANIA COMPLETIONS

Armstrong County, Kittanning Township: Equitable Gas Co. 2 John Linderman, 94,000 cu. ft. gas, Tiona sand, 2,800-55 ft., gas 2,809 ft., T.D. 3,404 ft.

Equitable Gas Co. 3280 Margaret Waltenbaugh, 64,000 cu. ft. gas, Murraysville 1,328-56 ft., gas 1,330 ft., Tiona 2,914-36 ft., gas 2,922 ft., T.D. 3,498 ft.

Clarion County, Porter Township: Owens-Illinois Glass Co. 6 Apex McMasters, 67,000 cu. ft. gas, T.D. 2,588 ft.

Red Bank Township: Owens-Illinois Glass Co. 1 J. F. Aaron, dry, T.D. 3,530 ft.

Fayette County, German Township: Boyd O. & G. Co. 1 Samuel Sapper, 32,000 cu. ft. gas, T.D. 2,556 ft.

Nicholson Township: Greensboro Gas Co. 4 American Coke & Fuel Co., dry, T.D. 2,807 ft.

Greene County, Jackson Township: Manufacturers Light & Heat Co. 4 Mary E. Smith, 420,000 cu. ft. gas, Fifth sand 3,220-25 ft., gas 3,222 ft., T.D. 3,415 ft.

WEST VIRGINIA

In Clay district, Hancock County, John T. Galey et al have resumed drilling in the test on the Lenora Ramsey farm and are now at 4,806 ft., in the Oriskany sand. The sand changed from white to dark gray at a depth of 4,797 ft. This well will be shot the second time.

WEST VIRGINIA COMPLETIONS

Clay County, Buffalo district: Pittsburgh & W. Va. Gas Co. 7869 Elk River Coal & Lumber Co., dry, T.D. 1,975 ft.

Jackson County, Ravenswood district: Guy Boggess et al 3 H. L. Tallman, 25 bbl., Berea, 2,567 ft.

Kanawha County, Elk district: South Penn Natural Gas Co. 10 W. S. Jarrett, 1 bbl., Squaw, T.D. 1,920 ft.

Poca district: Columbian Carbon Co. 12 H. C. Jones, dry in Big lime, T.D. 1,636 ft.

Putnam County, Curry district: Caldwell Gas Co. 1 Virgil Caldwell and Ensell Mercer, 127,000 cu. ft. gas, Berea 2,323-49 ft., T.D. 2,366 ft.

Curry district: G. H. Summerson 1 Millard Carpenter, 119,000 cu. ft. gas after shot, Berea 2,063-89 ft., T.D. 2,099 ft.

Wayne County, Grant district: Owens, Libby-Owens 27 Hoard-Baldwin, 19,000 cu. ft. gas, Big Injun 1,355-1,429 ft. gas, Berea 2,634-2,931 ft. gas, T.D. 3,256 ft.

Wetzel County, Grant district: Pittsburgh & W. Va. Gas Co. 1 Roland Barr et ux, 67,000 cu. ft. gas, Fifth sand 2,367 ft., gas 2,452 ft., T.D. 3,270 ft.

ORISKANY GAS FIELDS

Jackson County, Ripley district: West Va. Gas Corp. 1 W. E. Staats et al, 8,114,000 cu. ft. gas natural, R.P. 1,735 lb., Oriskany 5,253 ft., gas 5,255-75 ft., T.D. 5,275 ft.

Spartan Gas Co. 2 W. H. Walker, 9,283,000 cu. ft. gas, Oriskany 5,062 ft., T.D. 5,096 ft.

United Carbon Co. 17 E. W. Perkins, 4,500,000 cu. ft. natural, R.P. 1,800 lb., Oriskany 5,220 ft., T.D. 5,261 ft.

United Fuel Gas Co. 1 J. H. Smith, 9,005,000 cu. ft. gas, shot, R.P. 1,710 lb., Oriskany 5,229 ft., T.D. 5,274 ft.

Kanawha County, Poca district: Godfrey L. Cabot, Inc. 10 D. H. Martin, 146,000 cu. ft. gas, shot, Oriskany 5,062 ft., T.D. 5,133 ft.

Columbian Carbon Co. 1 L. M. Fields, 1,057,000 cu. ft. gas, shot, Oriskany 5,231 ft., T.D. 5,311 ft.

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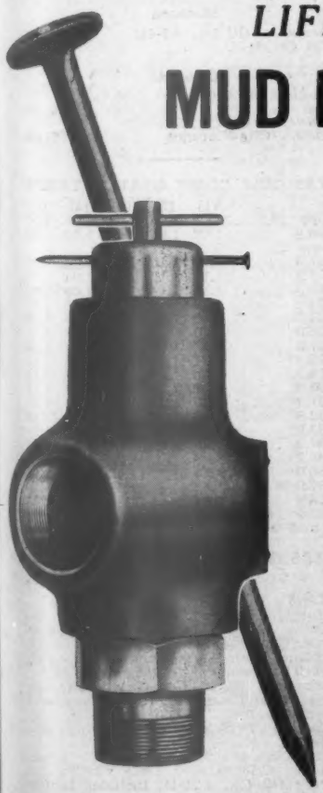

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CRUDE PRICES . . .

OKLAHOMA AND KANSAS GRAVITY TABLES

	1	2	3	4	5	6	7
Below 21	...	...	...	...	$.85	$.75	...
21-21.9	...	...	...	...	.87	.78	...
22-22.9	...	...	...	...	.89	.81	...
23-23.9	...	...	...	...	.91	.84	...
24-24.9	...	...	...	...	.93	.87	...
Below 25	$.93	...	...	$.86	...	...	...
25-25.9	.95	$.95	...	.88	.95	.90	...
26-26.9	.97	.97	...	.90	.97	.93	...
27-27.9	.99	.99	...	.92	.99	.96	...
28-28.9	1.01	1.01	$1.01	.94	1.01	.99	...
29-29.9	1.03	1.03	1.03	.96	1.03	1.02	...
30-30.9	1.05	1.05	1.05	.98	1.05	1.05	$1.05
31-31.9	1.07	1.07	1.07	1.00	1.07	1.07	1.07
32-32.9	1.09	1.09	1.09	1.02	1.09	1.09	1.09
33-33.9	1.11	1.11	1.11	1.04	1.11	1.11	1.11
34-34.9	1.13	1.13	1.13	1.06	1.13	1.13	1.13
35-35.9	1.15	1.15	1.15	1.08	1.15	1.15	1.15
36-36.9	1.17	1.17	1.17	1.10	1.17	1.17	1.17
37-37.9	1.19	1.19	1.19	1.12	1.19	1.19	1.19
38-38.9	1.21	1.21	1.21	1.14	1.21	1.21	1.21
39-39.9	1.23	1.23	1.23	1.16	1.23	1.23	1.23
40 and above	1.25	1.25	1.25	1.18	1.25	1.25	1.25

OKLAHOMA AND KANSAS TABLE EXPLANATION

COLUMN (1) MID-CONTINENT GRADES:
Pure Oil Co., 5-20-41.
Gulf Oil Corp., 5-20-41.
Skelly Oil Co. (Kansas only), 5-19-41.
H. F. Wilcox Oil & Gas Co., 5-20-41.

COLUMN (2) MID-CONTINENT GRADES:
White Eagle Oil Purchasing Co., Inc., 5-19-41, Kansas only.
Sinclair Prairie Oil Marketing Co., 5-20-41.

COLUMN (3) MID-CONTINENT GRADES:
Continental Oil Co., 5-19-41.
Phillips Petroleum Co., 5-19-41.
Tide Water Associated Oil Co., 5-20-41.

COLUMN (4) JACKSON, TILLMAN COUNTIES:
Gulf Oil Corp., 5-20-41.

COLUMN (5) MID-CONTINENT GRADES:
Standard Oil Co. (Indiana), 5-20-41.
National Refining Co., 5-20-41.

COLUMN (6) MID-CONTINENT GRADES:
Magnolia Petroleum Co., 5-21-41.
Shell Oil Co., Inc., 5-19-41.
Shell, in Carter County, 12-5-41.
Ben Franklin Refining Co., 12-4-41.
Carter Oil Co. (Oklahoma only), 5-19-41.

COLUMN (7) OKLAHOMA:
Champlin Refining Co., 5-20-41.

OKLAHOMA FLAT PRICE

Cumberland	$1.14
Pure Oil Co., 9-4-41.	

Canadian Fields

Imperial Oil, Ltd.:	
Petrolia, 11-6-39	$2.10
Oil Springs, 11-6-39	2.07
Bothwell, 11-6-39	2.10
Turner Valley, 7-16-41	$1.35-1.97

MIDDLE WEST FLAT PRICES
Illinois and Indiana

Ohio Oil Co.:	
Illinois basin, 5-21-41	$1.37
Eastern Illinois, 5-21-41	$1.22
Western Indiana, 5-21-41	1.22
Magnolia Petroleum Co.:	
Illinois basin, 5-21-41	$1.37
Carter Oil Co.:	
Illinois (Louden), 5-21-41	$1.37
Sohio Corp.:	
Illinois basin, 5-21-41	$1.37
Texas Co.:	
Illinois basin 5-21-41	$1.37
Gulf Refining Co.:	
Illinois basin 5-21-41	$1.37

Michigan

Simrall Corp., 5-27-41:	
Greendale, Porter, Vernon, Crystal, and Wise	$1.44
Buckeye, Bentley, Edenville, Beaverton, and Monitor (sweet)	1.42
Freeman, Redding, Lincoln, and Winterfield	1.39
Hamilton-Grout	1.29
West Branch-Arenac	1.24
Sohio Corp., 5-1-41:	
Bloomingdale-Columbia	$1.38
Mid-West Refineries, Inc., 5-1-41:	
Kent County	$1.38
Pure Oil Co., 5-27-41:	
Sherman	$1.39
Midland (Midland County)	1.44

EASTERN STATES

Pennsylvania and Ohio

South Penn Oil Co.:	
National lines, 3-26-42	$3.00
Southwest Penn, 3-26-42	2.65
Eureka lines, 3-26-42	2.59
Corning grade, 5-27-41	1.31
Tide Water Associated Oil Co.:	
Bradford, 3-26-42	$3.00
Allegany, N. Y., 3-26-42	3.00
Pennzoil Co.:	
Group A, 3-26-42	$2.93
Group B, 3-26-42	2.92
Group C, 3-26-42	2.91
Group D, 3-26-42	2.90
Group E, 3-26-42	2.88
Quaker State Oil Refining Corp.:	
In Buckeye lines, 3-26-42	$2.55
In Eureka lines, 3-26-42	2.59

Kentucky

Ashland Oil & Transportation Co., 6-19-41:	
Big Sandy River	$1.38
Kentucky River	1.43
Sohio Corp., 5-21-41:	
Birk City	$1.32

West Virginia

Pure Oil Co.:	
Cabin and Kelly Creek, 3-27-42	$2.59

LOUISIANA AND SOUTHERN ARKANSAS GRAVITY TABLE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Below 18	...	...	...	...	...	...	...	...	...	...	...	...	$.94	...	...	...	...	...
18-18.9	...	...	...	...	...	...	...	...	...	...	...	...	.96	...	...	...	...	...
19-19.9	...	...	...	...	...	...	...	...	...	...	...	...	.98	...	...	...	...	...
Below 20	...	...	...	...	...	...	...	$1.06	...	$.94	$.89	$.89	...	$1.06	...	...	...	...
20-20.9	...	...	...	...	...	...	...	1.08	...	.96	1.01	.91	1.00	1.08	...	...	...	...
Below 21	$.68	...	...	$.90	...	...	...	...	...	...	...	...	...	$.90	...	...	...	...
21-21.9	.70	...	...	.92	...	...	...	1.10	...	.96	1.03	.93	1.02	.92	1.10	...	...	...
22-22.9	.72	...	...	.94	...	...	...	1.12	...	1.00	1.05	.95	1.05	.94	1.12	...	...	...
23-23.9	.74	...	...	.97	...	...	...	1.14	...	1.02	1.07	.97	1.08	.96	1.14	...	...	...
24-24.9	.76	...	...	.98	...	...	...	1.16	...	1.04	1.09	.99	1.11	.98	1.16	...	...	...
Below 25	...	$.86	$.98	...	...	$.88	...	...	...	...	...	...	...	...	...	...	...	...
25-25.9	.78	.88	1.00	1.00	...	.90	...	1.18	...	1.06	1.11	1.01	1.14	1.00	1.18	...	...	...
26-26.9	.80	.90	1.02	1.02	...	.92	...	1.20	...	1.08	1.13	1.03	1.17	1.02	1.20	...	...	...
27-27.9	.82	.92	1.04	1.04	...	.94	...	1.22	...	1.10	1.15	1.05	1.19	1.04	1.22	...	...	...
28-28.9	.84	.94	1.06	1.06	...	.96	...	1.24	...	1.12	1.17	1.07	1.21	1.06	...	$1.14	$1.06	...
29-29.9	.86	.96	1.08	1.08	...	.98	...	1.26	...	1.14	1.19	1.09	1.23	1.08	...	1.16	1.08	...
30-30.9	.88	.98	1.10	1.10	$1.28	1.00	...	1.28	...	1.16	1.21	1.11	1.25	1.10	...	1.18	1.10	$1.05
31-31.9	.90	1.00	1.12	1.12	1.30	1.02	...	1.30	$1.07	1.18	1.23	1.13	1.27	1.12	...	1.20	1.12	1.07
32-32.9	.92	1.02	1.14	1.14	1.32	1.04	...	1.32	1.09	1.20	1.25	1.15	1.29	1.14	...	1.22	1.14	1.09
33-33.9	.94	1.04	1.16	1.16	1.34	1.06	...	1.34	1.11	1.22	1.27	1.17	1.31	1.16	...	1.24	1.16	1.11
34-34.9	.96	1.06	1.18	1.18	1.36	1.08	...	1.36	1.13	1.24	1.29	1.19	1.33	1.18	...	1.26	1.18	1.13
35-35.9	.98	1.08	1.20	1.20	1.38	1.10	...	...	1.15	...	...	...	...	1.20	...	1.28	1.20	1.15
Below 36	...	...	...	...	...	...	$1.07	...	...	...	...	...	...	...	...	...	...	...
36-36.9	1.00	1.10	1.22	1.22	1.40	1.12	1.09	...	1.17	...	...	...	...	1.22	...	1.30	1.22	1.17
37-37.9	1.02	1.12	1.24	1.24	1.42	1.14	1.11	...	1.19	...	...	...	...	...	...	...	...	1.19
38-38.9	1.04	1.14	1.26	1.26	1.44	1.16	1.13	...	1.21	...	...	...	...	...	...	...	...	1.21
39-39.9	1.06	1.16	1.28	1.28	1.46	1.18	1.15	...	1.23	...	...	...	...	...	...	...	...	1.23
40 & above	1.08	1.18	1.30	1.30	1.48	1.20	1.17	...	1.25	...	...	...	...	...	...	...	...	1.25

LOUISIANA AND SOUTHERN ARKANSAS TABLE EXPLANATION

Standard Oil Co. of Louisiana, 5-22-41.

COLUMN (1) applies to Atlanta, Buckner, Magnolia, Schuler (Jones sand), Village, and Lewisville fields.

COLUMN (2) applies to De Soto, Sabine, Fouke, Homer, Miller County, Sugar Creek, and Nebo.

COLUMN (3) applies to Bunkie, Eola, Olla, and South Olla.

COLUMN (4) applies to Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, North Crowley, South Crowley, Port Barre, Potash, Roanoke, St. Martinville, and Port Allen.

COLUMN (5) applies to University (Baton Rouge). Posted 6-2-42.

COLUMN (6) applies to Cotton Valley crude, Rodessa and Shreveport (Cross Lake); also Anse La Butte, effective 8-1-41, starting at 80 cents for below 21°, also, to Caddo effective 10-15-41.
Continental Oil Co., 5-21-41.

COLUMN (7) applies to Abbeville, Louisiana.
Stanolind Oil & Gas Co., 5-21-41.

COLUMN (8) applies to East and West Hackberry.

COLUMN (6) applies to Caddo Parish, effective 10-15-41.

COLUMN (9) applies to Evangeline, Acadia Parish.
Lion Oil Refining Co., 5-22-41.

COLUMN (1) applies to Reynolds lime, Jones sand, Schuler, Ark.

COLUMN (2) applies to El Dorado, West and South Rainbow fields, Snow Hill, and Schuler-Morgan sand.
Placid Oil Co., 5-22-41.

COLUMN (3) applies to Olla.

COLUMN (2) applies to Nebo field.
Shell Oil Co., Inc., 5-20-41.

COLUMN (10) applies to Roanoke, Chalkley.

COLUMN (11) applies to Iowa, Black Bayou, White Castle.

COLUMN (12) applies to Gibson, South Houma, Hester, West Lake Verret.
Magnolia Petroleum Co., 5-21-41.

COLUMN (13) applies to Lockport, Cameron Meadows, and West Gueydan, La.

COLUMN (6) applies to Haynesville, Cotton Valley, Rodessa, La., and Miller County, Arkansas.
Phillips Petroleum Co., 3-29-41.
Arkansas Fuel Oil Co., 2-19-42.

COLUMN (1), Schuler (Jones sand), except schedule starts at 70 cents for below 25° gravity.
Gulf Refining Co., 5-21-41.

COLUMN (9), Jennings.

COLUMN (8), Edgerly, Starks, Vinton East Hackberry, Cameron Meadows, and Leesville.

COLUMN (16) applies to Grand Bay, Quarantine Bay, Timbalier Bay, and West Bay, except schedule starts at $1.12 for below 28° gravity.

COLUMN (6) applies to Caddo, Homer, Bull Bayou, Crichton, De Soto, Haynesville, and El Dorado.

COLUMN (4) applied to West Gueydan, effective 5-25-42.
Pure Oil Co., 4-22-41.

COLUMN (14) applies to Gueydan crude.

COLUMN (6), Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, and El Dorado.
Texas Co., 5-21-41.

COLUMN (6) applies to North Louisiana.

COLUMNS (15) and (16), Bay St. Elaine, Caillou Island, Iberia, Lake Barre, Lake Pelto, Leesville, Port Barre. (Schedules A and B).

COLUMN (17), Bateman Lake, Dog Lake, Fausse Point, Horseshoe Bayou, Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche, and Delta Duck Club.

COLUMN (18), Delta Farm, Lake Salvador, Golden Meadow.

LOUISIANA AND ARKANSAS FLAT PRICES

Continental Oil Co., 5-21-41:	
Tepetae and Lake Arthur	$1.18
Ville Platte	1.20
Gulf Refining Co., 5-21-41:	
Smackover (Ark.)	$0.83
Lion Oil Refining Co., 5-22-41:	
Smackover (heavy)	$0.83
Dorcheat	1.15
Phillips Petroleum Co., 5-22-41:	
Smackover (heavy)	$0.83
Placid Oil Co., 5-22-41:	
Tullos-Urania (5-21-41)	$1.15
Cotton Valley dist. (above 30°)	1.30
Cotton Valley (Holloway sand)	1.25
Cotton Valley (Bodcaw-D sands)	1.20
Pure Oil Co.:	
Bosco (5-21-41)	$1.14
Sweet Lake (5-22-41)	1.06
Creole (5-22-41)	1.16
Republic Oil Co., 6-2-41:	
Nevada County, Arkansas	$0.80
Shell Oil Co., Inc., 5-20-41:	
Happytown	$1.18
Standard Oil Co. of Louisiana, 5-22-41:	
Big Creek, Dorcheat, McKamie (sour)	$1.15
Smackover (heavy)	.83
Cotton Valley distillate (9-1-41)	1.40
Cotton Valley (Holloway sand)	1.25
Lisbon distillate	1.20
Republic Oil Refining Co., 5-21-41:	
Bayou Pigeon	$1.20
Texas Co., 5-21-41:	
Erath	$1.21
Garden Island	1.86
Lafitte, Paradis	1.19
Lake Mongoulois	1.86

ROCKY MOUNTAIN GRAVITY TABLE

Below 29	$0.96
29-29.9	.98
30-30.9	1.00
31-31.9	1.02
32-32.9	1.04
33-33.9	1.06
34-34.9	1.08
35-35.9	1.10
36-36.9	1.12
37-37.9	1.14
38-38.9	1.16
39-39.9	1.18
40 and above	1.20

Stanolind Oil & Gas Co., 5-20-41, includes Dutton Creek, Midway, and Salt Creek except Tensleep crude, Wyoming.

Sinclair-Wyoming Oil Co., 5-20-41, includes Salt Creek and Lost Soldier, except Tensleep crude, Wyoming.

Continental Oil Co., 5-21-41, includes Fort Collins and Wellington, Colorado

Wyoming

Ohio Oil Co.:	
Rock River (5-20-41)	$1.18
Lance Creek (7-1-41)	1.13
Elk Basin and Grass Creek (light)	1.09
Stanolind Oil & Gas Co., 5-20-41:	
Frannie (light)	.70
Frannie (heavy)	.47
Grass Creek (light)	1.09
Grass Creek (heavy)	.59
Hamilton dome	.45
Elk basin	1.09
Salt Creek (Tensleep)	.6785
Continental Oil Co.:	
Big Muddy (5-30-41)	$1.08
Lance Creek (9-1-41)	1.13

Montana

Continental Oil Co., 4-1-41:	
Cat Creek	$1.18

Colorado

Stanolind Oil & Gas Co., 5-20-41:	
Iles	$1.07
Continental Oil Co., 5-21-41:	
Canon City-Florence	$1.09

TEXAS GULF COAST GRAVITY TABLES

	(1)	(2)	(3)	(4)	(5)
Below 20	$1.06	$1.06	...	$.98	$.93
20-20.9	1.08	1.08	...	1.00	.98
Below 21	...	...	$1.08	...	...
21-21.9	1.10	1.10	1.10	1.02	.97
22-22.9	1.12	1.12	1.12	1.04	.99
23-23.9	1.14	1.14	1.14	1.06	1.01
24-24.9	1.16	1.16	1.16	1.08	1.03
25-25.9	1.18	1.18	1.18	1.10	1.05
26-26.9	1.20	1.20	1.20	1.12	1.07
27-27.9	1.22	1.22	1.22	1.14	1.09
28-28.9	1.24	1.24	1.24	1.16	1.11
29-29.9	1.26	1.26	1.26	1.18	1.13
30-30.9	1.28	1.28	1.28	1.20	1.15
31-31.9	1.30	1.30	1.30	1.22	1.17
32-32.9	1.32	1.32	1.32	1.24	1.19
33-33.9	1.34	1.34	1.34	1.26	1.21
34-34.9	1.36	1.36	1.36	1.28	1.23
35-35.9	1.38	...	1.38	1.30	1.25
36-36.9	1.40	...	1.40	1.32	1.27
37-37.9	1.42	...	1.42	1.34	1.29
38-38.9	1.44	...	1.44	1.36	1.31
39-39.9	1.46	...	1.46	1.38	1.33
40 and above	1.48	...	1.48	1.40	1.35

TEXAS GULF COAST GRAVITY TABLE EXPLANATION

COLUMN (1):
Humble Oil & Refining Co., 5-21-41, includes Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa (new), Raccoon Bend, South Thompsons Sugarland, Thompson, and Webster fields.

Stanolind Oil & Gas Co., 5-21-41, includes West Beaumont, High Island, and Spindletop.

Sinclair Prairie Oil Marketing Co., 5-21-41.

Stanolind Oil Purchasing Co., 4-9-42, includes Clinton and Lake Creek.

Pure Oil Co., 4-21-41, includes Louise and Ganado.

Gulf Refining Co., 5-21-41, includes Spindletop, Sour Lake, Lovells Lake,

West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompson, Lochridge, Dyersdale, and Hull (old).

Sun Oil Co., 5-21-41, includes Barbers Hill, Batson (old), Bayou Blue, Chacahoula, Cotton Lake, Esperson (below 35° gravity), Fausse Point, Goose Creek, Greens Lake, Hackberry (east and west), Hull (below 25°), Humble (below 35°), Nome, North Dayton (below 25°), Orange, Saratoga, Sour Lake, South Liberty, and Vinton.

COLUMN (2):
Texas Co., 5-21-41, includes Arrioia, Ganado, Hamman, Hillje, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, and Withers.

COLUMN (3):
Pan American Production Co., 5-21-41 includes Hastings and South Houston.

Stanolind Oil & Gas Co., 4-1-41, includes High Island, Spindletop, Hastings, and South Houston.

COLUMN (4):
Humble Oil & Refining Co., 5-21-41, includes Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull (new and old), Pierce Junction, Red Fish Reef, and Turtle Bay.

Gulf Refining Co., 5-21-41, includes Anahuac, Hull (new), Thompson (deep). Pierce Junction, and Orange.

Sun Oil Co., 5-21-41, includes Anahuac, Caplen and Turtle Bay.

Humble Oil & Refining Co., 3-29-41, includes Dickinson, Gillock, Hardin. League City, and Rowan.

COLUMN (5):
Pan American Production Co., 5-21-41, includes Gillock, except scale starts at 95 cents below 21°.

Stanolind Oil Purchasing Co., 5-21-41, includes Fairbanks, North Houston, and Roslyn.

SOUTH TEXAS AND SOUTHWEST TEXAS GRAVITY TABLES

	1	2	3	4	5	6	7
Below 20	$1.03	$1.08	$1.08	$.89	$1.03	$1.03	$1.08
20-20.9	1.05	1.10	1.10	.90	1.05	1.05	1.10
21-21.9	1.07	1.12	1.12	.91	1.07	1.07	1.12
22-22.9	1.09	1.14	1.14	.92	1.09	1.09	1.14
23-23.9	1.11	1.16	1.16	.93	1.11	1.11	1.16
24-24.9	1.13	1.18	1.18	.94	1.13	1.13	1.18
25-25.9	1.15	1.20	1.20	.95	1.15	1.15	1.20
26-26.9	1.17	1.22	1.22	.96	1.17	1.17	1.22
27-27.9	1.19	1.24	1.24	.97	....	1.19	1.24
28-28.9	1.21	1.26	1.26	.98	....	1.21	1.26
29-29.9	1.23	1.28	....	.99	....	....	1.28
30-30.9	1.25	1.30	....	1.00	....	....	1.30
31-31.9	1.27	1.32	....	1.01	....	....	1.32
32-32.9	1.29	1.34	....	1.02	....	....	1.34
33-33.9	1.31	1.36	....	1.03	....	....	1.36
34-34.9	1.33	1.38	....	1.04	....	....	1.38
35-35.9	1.35	1.40	....	1.05	....	....	1.40
36-36.9	1.37	1.42	....	1.06	....	....	....
37-37.9	1.39	1.44	....	1.07	....	....	....
38-38.9	1.41	1.46	....	1.08	....	....	....
39-39.9	1.43	1.48	....	1.09	....	....	....
40 and above	1.45	1.50	....	1.10	....	....	....

SOUTH AND SOUTHWEST TEXAS TABLE EXPLANATION

COLUMN (1) MIRANDO:
Humble Oil & Refining Co., 5-21-41, includes Blanchard Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (North and South), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.

Magnolia Petroleum Co., 5-21-41.

Continental Oil Co., 7-1-41. Includes Hoffman, Government Wells (North and South), Lopez, Moco, Colmena, Seven Sisters, South Seven Sisters, Loma Novia, Conoco Driscoll, O'Hern, Piedre Lumbre, and Taranchauas.

American Mineral Spirits Co., 5-21-41, includes Adami and Munson.

Republic Oil Refining Co., 5-21-41, includes Heyser field crude.

COLUMN (2) REFUGIO:
Continental Oil Co., 7-1-41, includes Minnie Bock, Clara Driscoll, South Clara Driscoll, Driscoll Ranch, Orange Grove, and Wade City.

Humble Oil & Refining Co., 5-21-41, includes East White Point, Greta, Melon Creek, O'Connor-McFaddin, Plymouth, Saxet, Taft, and Tom O'Connor.

American Mineral Spirits Co., 5-21-41, includes Plymouth, Taft, and East White Point.

COLUMN (3) REFUGIO:
Texas Co., 5-21-41, includes Greta, Saxet, and Taft.

COLUMN (4) LA ROSA:
American Mineral Spirits Co., 3-29-41.

COLUMN (5) DUVAL-MIRANDO:
Sun Oil Co., 5-21-41.

COLUMN (6) DUVAL-MIRANDO:
Texas Co., 5-21-41.

COLUMN (7) NUECES COUNTY:
American Mineral Spirits Co., 5-21-41.
Republic Oil Refining Co., 5-21-41.

WEST TEXAS, PANHANDLE AND NEW MEXICO TABLE EXPLANATION

COLUMN (1):
Humble Oil & Refining Co., 5-21-41, includes Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler, and Yoakum counties, West Texas, and Lea County, New Mexico.

Gulf Refining Co., 5-21-41, includes Crane, Ector, Upton, Ward, and Winkler counties, West Texas.

COLUMN (2):
Sinclair Prairie Oil Marketing Co., 5-21-41, includes West Texas and Lea County, New Mexico. Effective 5-29-41 in Eddy County, New Mexico.

Magnolia Petroleum Co., 5-21-41, includes Upton, Howard, Glasscock, Mitchell, Winkler, Cochran, Hockley, Yoakum, and Gaines counties.

COLUMN (3):
Texas Co., 5-21-41, includes Crane and Winkler counties, Texas, and Lea County, New Mexico.

COLUMN (4) TEXAS PANHANDLE:
Magnolia Petroleum Co., 7-9-41.
Continental Oil Co., 7-9-41.
Phillips Petroleum Co., 7-9-41.

COLUMN (5) WINKLER AND LEA:
Stanolind Oil & Gas Co., 5-21-41, includes Winkler County only.
Gulf Refining Co., 5-21-41, includes Lea County, New Mexico, only

COLUMN (6) GRAY COUNTY:
Texas Co., 5-21-41.
H. F. Wilcox Oil & Gas Co., 7-9-41.

COLUMN (7) LEA COUNTY:
Magnolia Petroleum Co., 5-21-41.

COLUMN (8) EDDY COUNTY:
Continental Oil Co., 5-30-41.

COLUMN (9):
Shell Oil Co., Inc., 5-20-41, includes Crane, Ector, Howard, Glasscock, Upton, Winkler, and Yoakum counties, Texas, and Lea County, New Mexico.

COLUMN (10) TEXAS PANHANDLE:
Humble Oil & Refining Co., 7-9-41.

COLUMN (11) PANHANDLE:
Sinclair Prairie Oil Marketing Co., 5-23-41.

WEST TEXAS, PANHANDLE, AND NEW MEXICO GRAVITY TABLES

	1	2	3	4	5	6	7	8	9	10	11
Below 20	$0.70	....	....	....	....	....	....	....	$0.70	$0.73	....
20-20.9	.72	....	....	....	....	....	....	....	.72	.75	....
21-21.9	.74	....	....	....	....	....	....	....	.74	.77	....
22-22.9	.76	....	....	....	....	....	....	....	.76	.79	....
23-23.9	.78	....	$0.78	....	....	....	....	....	.78	.81	....
24-24.9	.80	....	.80	....	....	....	....	....	.80	.83	....
Below 25	....	$0.80	....	....	....	....	....	$0.80	....	....	$0.83
25-25.9	.82	.82	.82	....	$0.82	....	.82	....	.82	.85	.85
26-26.9	.84	.84	.84	....	.84	....	.84	....	.84	.87	.87
27-27.7	.86	.86	.86	....	.86	....	.86	....	.86	.89	.89
28-28.9	.88	.88	.88	$0.91	.88	....	.88	$0.88	.88	.91	.91
29-29.9	.90	.90	.90	.93	.90	....	.90	.90	.90	.93	.93
30-30.9	.92	.92	.92	.95	.92	....	.92	.92	.92	.95	.95
31-31.9	.94	.94	.94	.97	.94	....	.94	.94	.94	.97	.97
32-32.9	.96	.96	.96	.99	.96	....	.96	.96	.96	.99	.99
33-33.9	.98	.98	.98	1.01	.98	....	.98	.98	.98	1.01	1.01
34-34.9	1.00	1.00	1.00	1.03	1.00	$1.03	1.00	1.00	1.00	1.03	1.03
35-35.9	1.02	1.02	1.02	1.05	1.02	1.05	1.02	1.02	1.02	1.05	1.05
36-36.9	1.04	1.04	1.04	1.07	1.04	1.07	1.04	1.04	1.04	1.07	1.07
37-37.9	1.06	1.06	....	1.09	1.06	1.09	....	1.06	....	1.09	1.09
38-38.9	1.08	1.08	....	1.11	1.08	1.11	....	1.08	....	1.11	1.11
39-39.9	1.10	1.10	....	1.13	1.10	1.13	....	1.10	....	1.13	1.13
40 and above	1.12	1.12	....	1.15	1.12	1.15	....	1.12	....	1.15	1.15

NORTH TEXAS, WEST CENTRAL TEXAS, EAST CENTRAL TEXAS GRAVITY TABLES

	1	2	3	4	5	6	7	8
Below 20	....	....	....	....	$.80	....	....	....
20-20.9	....	....	....	....	.82	....	....	....
Below 21	....	....	....	....	....	$.81	....	....
21-21.9	....	....	....	....	.84	.83	....	....
22-22.9	....	....	....	....	.86	.85	....	....
23-23.9	....	....	....	....	.88	.87	....	....
24-24.9	....	....	....	....	.90	.89	....	....
Below 25	....	....	....	$.88	....	....	$.89	$.95
25-25.9	$.91	....	.90	$.97	.92	.91	.91	.97
26-26.9	.93	....	.92	.99	....	.93	.93	.99
27-27.9	.95	....	.94	1.01	....	.95	.95	1.01
28-28.9	.97	.97	.96	1.03	....	.97	.97	1.03
29-29.9	.99	.99	.98	1.05	....	.99	.99	1.05
30-30.9	1.01	1.01	1.00	1.07	....	1.01	1.01	1.07
31-31.9	1.03	1.03	1.02	1.09	....	1.03	1.03	1.09
32-32.9	1.05	1.05	1.04	1.11	....	1.05	1.05	1.11
33-33.9	1.07	1.07	1.06	1.13	....	1.07	1.07	1.13
34-34.9	1.09	1.09	1.08	1.15	....	1.09	1.09	1.15
35-35.9	1.11	1.11	1.10	1.17	....	1.11	1.11	1.17
36-36.9	1.13	1.13	1.12	1.19	....	1.13	1.13	1.19
37-37.9	1.15	1.15	1.14	1.21	....	1.15	1.15	1.21
38-38.9	1.17	1.17	1.16	1.23	....	1.17	1.17	1.23
39-39.9	1.19	1.19	1.18	1.25	....	1.19	1.19	1.25
40 and above	1.21	1.21	1.20	1.27	....	1.21	1.21	1.27

NORTH TEXAS, WEST CENTRAL TEXAS, EAST CENTRAL TEXAS TABLE EXPLANATION

COLUMN (1) WEST CENTRAL AND NORTH:
Humble Oil & Refining Co., 12-11-41, includes Brown, Callahan, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, and Throckmorton counties.

Panhandle Refining Co., 12-11-41, in Leuders area.

Gulf Refining Co., 12-11-41.
Sinclair Prairie Oil Marketing Co., 12-11-41.

COLUMN (2) NORTH TEXAS:
Continental Oil Co., 12-11-41.
Magnolia Petroleum Co., 12-11-41.
Panhandle Refining Co., 12-11-41.
Bell Oil & Gas Co., 12-11-41.
Texas Co., 12-11-41.

COLUMN (3) EAST CENTRAL:
Magnolia Petroleum Co., 5-21-41, includes Cass, Panola, and Rodessa (Texas and Louisiana), and Miller County, Arkansas.

(Continued on Page 75)

STANDARD OIL CO. OF CALIFORNIA

CRUDE-OIL PRICES EFFECTIVE MAY 23, 1941

(All gravities above those quoted take highest price offered in that field)

Gravity	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Playa Del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Elwood Terrace
14-14.9	....	$.68	....	....	$.71	....	....	$.70	....	$.70	$.70	$.70	$.72	....	....	....	....	....	$.73	$.73	$.73	....	....	....
15-15.9	....	.71	....	....	.75	$.76	....	.72	....	.72	.71	.72	.72	....	....	....	....	....	.73	.73	.73	....	....	....
16-16.9	....	.74	$.79	....	.79	.79	....	.75	....	.74	.73	.75	.72	....	....	....	....	....	.73	.73	.73	....	....	....
17-17.9	....	.78	.82	....	.82	.82	....	.78	....	.77	.76	.78	.72	....	....	....	....	....	.75	.78	.73	....	....	....
18-18.9	$.80	.82	.86	....	.86	.85	....	.81	....	.80	.79	.82	.74	....	....	....	....	....	.78	.81	.73	....	....	....
19-19.9	.84	.86	.90	....	.89	.88	....	.85	....	.83	.82	.85	.77	....	....	....	....	$.73	.81	.84	.75	....	....	....
20-20.9	.88	.90	.94	....	.93	.92	$.80	.88	....	.86	.85	.89	.80	....	....	....	....	.76	.85	.87	.77	....	....	....
21-21.9	.92	.94	.98	....	.96	.95	.84	.91	....	.89	.89	.92	.84	....	....	....	....	.79	.90	.90	.80	....	....	....
22-22.9	.96	.98	1.02	$.88	.99	.98	.87	.95	....	.93	.93	.96	.87	....	....	....	....	.83	.94	.93	.83	$.76	....	....
23-23.9	1.00	1.02	1.05	.92	1.02	1.01	....	.98	....	.97	.98	1.00	.91	....	....	....	....	.87	.99	.96	.86	.80	....	....
24-24.9	1.03	1.06	1.07	.97	1.05	1.04	f.o.b.	1.01	....	1.01	1.02	1.03	.94	$.99	....	....	....	.90	1.03	.99	.89	.83	....	....
25-25.9	1.07	1.09	1.10	1.01	1.08	1.07	our	1.04	....	1.05	1.06	1.07	.98	1.02	....	....	....	.94	1.07	1.01	.92	....	....	....
26-26.9	1.11	1.12	1.12	1.06	1.11	1.10	pipe	1.08	....	1.09	1.10	1.11	1.01	1.06	....	....	....	.97	1.11	1.04	.95	....	....	....
27-27.9	1.15	1.15	1.15	1.10	1.14	1.14	line	1.11	....	1.13	....	1.15	1.05	1.10	$1.04	....	....	1.01	1.15	1.07	.98	....	....	....
28-28.9	1.18	1.18	1.18	1.15	1.17	1.17	....	1.14	....	1.17	....	....	1.08	1.13	1.08	....	....	1.04	1.19	1.10	1.00	....	....	....
29-29.9	1.20	1.21	....	1.19	1.20	1.20	....	....	....	....	....	....	1.12	1.17	1.12	....	....	1.07	1.24	1.13	1.02	....	....	....
30-30.9	1.23	1.24	....	....	1.23	1.22	....	....	$1.17	....	....	....	1.15	1.21	1.15	$1.01	$1.00	1.10	1.28	1.16	1.04	....	....	f.o.b.
31-31.9	....	....	....	....	....	1.24	....	....	1.21	....	....	....	1.19	1.24	1.19	1.04	1.12	1.14	....	....	1.06	....	....	ship
32-32.9	....	....	....	....	....	....	....	....	1.25	....	....	....	1.23	1.28	1.23	1.07	1.14	1.17	....	....	1.09	....	....	....
33-33.9	....	....	....	....	....	....	....	....	1.29	....	....	....	1.27	....	1.26	1.10	1.17	....	....	....	1.11	....	....	$1.22
34-34.9	....	....	....	....	....	....	....	....	1.32	....	....	....	1.31	....	1.30	1.13	1.20	....	....	....	1.13	....	....	1.25
35-35.9	....	....	....	....	....	....	....	....	1.36	....	....	....	1.35	....	....	1.16	1.22	....	....	....	....	....	$1.23	1.28
36-36.9	....	....	....	....	....	....	....	....	....	....	....	....	1.39	....	....	1.19	1.25	....	....	....	....	....	1.26	....
37-37.9	....	....	....	....	....	....	....	....	....	....	....	....	1.43	....	....	1.22	....	....	....	....	....	....	1.29	....
38-38.9	....	....	....	....	....	....	....	....	....	....	....	....	1.47	....	....	1.25	....	....	....	....	....	....	....	....
39-39.9	....	....	....	....	....	....	....	....	....	....	....	....	1.51	....	....	....	....	....	....	....	....	....	....	....
40-40.9	....	....	....	....	....	....	....	....	....	....	....	....	1.53	....	....	....	....	....	....	....	....	....	....	....

Standard posts 75 cents for all grades at Newhall, Kern River, Kern Front, McKittrick and Round Mountain.

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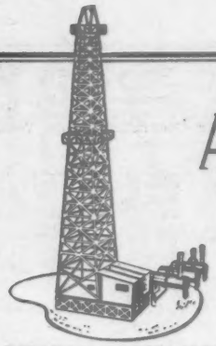

Among the Drilling

Contractors Study New OPA Ruling Placing Ceiling Price on Drilling

THE RECENT RULING of the regional office of the Office of Price Administration at Dallas, Tex., that contract oil-well drilling and oil-well servicing are governed by the general maximum price regulation, and thus subject to ceiling prices, is causing considerable concern among oil-well drilling contractors. Through the American Association of Oilwell Drilling Contractors, attempts are being made by direct contact in Washington, D. C., to determine the full significance of the ruling. The local ruling, however, has been referred to Washington, and it is possible it might be overruled.

Under the Dallas ruling, contract oil-well drilling and oil-well servicing are not specifically listed as covered under Maximum Price Regulation 165 (Services), nor exempt under Revised Supplementary Regulation 11. If enforced, the highest prices that could be charged in any given area would be the highest price charged by the contractor during March 1942.

The general opinion of contractors in respect to placing a ceiling price on their services is reflected in a statement issued by Brad Mills, executive secretary, American Association of Oilwell Drilling Contractors, as follows:

"Drilling of oil and gas wells under contract involves so many intangible factors that it is impossible to tell in advance what may be encountered. All areas differ in drilling conditions, and contract prices are radically affected by the well depth, size of hole, formations, lease conditions, transportation, and a dozen other factors. Payments often are made part in cash, part in acreage, and frequently in oil payments that are paid over a long period of time. It is obvious that unless all of these variable conditions are considered, any price stated by an oil-well drilling contractor as his ceiling price would not be accurate.

"The drilling contractor has little to offer but service. His work is not like building a house, or completing any project where the principal cost factors are in evidence. No person knows the hazards that will be encountered in drilling an oil or gas well. Drilling of a wildcat well is a gamble in every sense of the word. Establishment of a ceiling price on this type of work is impractical, since no known factors exist on which to base fair contract prices. The bids of 10 contractors on drilling of this type might range from $7 to $14 per foot; yet each contractor might try his best to consider all factors involved. It is impossible to estimate the drilling time, anticipate formations with any accuracy, foresee hazards, and estimate wear and tear on equipment. No two jobs are alike."

•

NICKLOS Drilling Co., Houston, Tex., has started drilling on 3 Reed, Pine Prairie field, Evangeline Parish, Louisiana. In the same field, on the southwest flank, drilling continues below 8,700 ft. in Texas 3-B Le Danois, an offset to the discovery well.

GREY & WOLFE, Houston, Tex., are drilling below 10,570 ft. in La Gloria Corp. 1 Grogan-Cochran Lumber Co., a wildcat located southeast of Magnolia, Montgomery County, Texas. A string of 7-in. casing was cemented the previous week at 10,335 ft.

PETROLEUM Well Service Co., Houston, Tex., is moving in a rotary rig 4 miles northeast of Ganado, Jackson County, Texas, for W. S. Boyle et al 1 J. M. Heard, a projected 6,000-ft. wildcat, in the F. Menefee Survey. In the meantime two other operations are reported for the same operator in the Stewart field, Jackson County.

J. W. FRAZIER, Houston, Tex., has abandoned 1 Hutcheson, a wildcat located in the Cross Timbers area, Harris County, Texas, which was drilled for Hebert & Smith. In the Dyersdale field, Harris County, the contractor's 2 Carroll is to be completed in the regular field pay after several attempts to open production from a deep sand failed.

BREWSTER-BARTLE Drilling Co., Houston, Tex., has started drilling operations on a 6,500-ft. contract in Tyler County, Texas, for Dishman & Lucas. The well is 1 Angelina Lumber Co., near Woodville. In the meantime, casing was cemented for testing Ohio Oil Co. 2 McDonald, located in the North Bay City field. Matagorda County, Texas. Northeast of Montgomery, Montgomery County, Texas, George W. Strake 1 T. J. Peel was approaching the top of the Wilcox formation.

PARKER Drilling Co., Tulsa, is quiting its 1 Druly, a wildcat test in 28-23s-37w, 9 miles northwest of Lakin, Kearny County, Kansas. The well was dry, and rig is being moved off.

CONTRACT is expected to be let in the near future on Cities Service Oil Co. 1 J. E. and N. D. Price, a wildcat located in the Blessing area. Matagorda County, Texas.

NOBLE Drilling Co., Tulsa, has the contract on Atlantic Refining Co. et al 1-A University, Section 9, Block 12, University Survey, 12 miles south of the Fullerton field, Andrews County, West Texas, which last week was drilling below 9,800 ft.

TWO STATES Drilling Co., Dallas, Tex., is drilling Fullerton Oil Co. 4 Wilson, west offset to the No. 2, in the Fullerton field, Andrews County, Texas.

BEARDMORE Drilling Co., Wichita, Kans., drilling for H. K. Beardmore, president of the company, has completed another well in the new Wilkins Southeast field, Ellsworth County, Kansas. The well, 3. L. E. Alden, produced 169 bbl. daily on potential test from the Arbuckle dolomite at 3,228 ft.

ROGERS BROTHERS Drilling Co., Wichita Falls, Tex., has completed a well for itself in the Bowers field. Montague County, Texas. The well, 1 Glass, Woodruff Survey, flowed 100 bbl. in 3 hours from a depth of 2,930-46 ft.

BUTLER & HORNE Drilling Co., Dallas, Tex., has two rigs running for itself in the new Reddin field, Coleman County, Texas. One, 1 W. H. Frazier, in Section 27, Block 17, T.&P. Survey, is a southwest offset to the discovery well, drilled by the same company. The other is 2 Hudson, in Section 3.

NOBLE Drilling Co., Tulsa, is drilling the first of a series of deep tests to be undertaken on various wildcat blocks assembled by Stano-

Contractors

Use

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Use a pair of Simplex Geared Jacks to pull your casing strings. Tremendous "break-away" power. Exert combined pull of 70 tons. No jerk—easy on casing. Safe — operators face each other and jack in unison. Described in Bulletin "Oil-42."

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Better, Safer Oil Field Jacks Since 1899

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LEVER · SCREW · HYDRAULIC
Jacks

THE QUESTION BOX

Why is it that scores of drilling rig operators now use Armstrong Forged Steel Steam Traps?

For the answer, see your local Armstrong Steam Trap Representative or write ARMSTRONG MACHINE WORKS, 888 Maple St., Three Rivers, Mich.

Stanolind Oil & Gas Co. in Jackson County, Oklahoma. This test is in 36-1s-24w, near El Dorado, in the southwestern part of the county. At latest report it was drilling below 3,350 ft. Another Oklahoma wildcat being drilled by Noble Drilling Co. that is being watched closely is 1 Jolliff, in 24-5-1e, south of Ardmore, Carter County.

SIMPSON & NOBLE, Wichita, Kans., has been awarded contract by W. P. Faulkner to drill a test in 28-21s-13w, a mile southwest of the Hazel pool, Stafford County, Kansas. Rig is being set up.

HERNDON Drilling Co., Tulsa, is drilling 1 Long, in 27-26s-16w, 14 miles southwest of the discovery gas well of the new English field, Edwards County, Kansas. The well is below 2,700 ft. This contractor also has taken a farmout from Stanolind Oil & Gas Co. south of the old Shutts field, Ellis County, Kansas, and is starting a test there.

OSAGE Drilling Co., Seagraves, Tex., is setting up rig to deepen 5 University, Emma field, Andrews County, West Texas, from the regular producing horizon at 4,286 ft., in which it was completed in 1940, to the Holt lime around 5,200 ft.

DELTA Drilling Co., Tyler, Tex., has started an 8,500-ft. wildcat test, 1 Goldsmith, 3 miles northwest of Quitman, and 8 miles southwest of the Cole pool, Wood County, Texas. Delta is a joint operation with Rube Benton of Fort Worth, Tex., as well as the contractor on the test.

C. C. GILGER Drilling Co., Shreveport, La., is starting a wildcat test for its own account on its Cass County Land Co. lease, J. Watson Survey, 3 miles northeast of Lodi, Cass County, East Texas.

B & R Drilling Co., Augusta, Kans., has completed 1 Tittel, in 14-15-4w, Trapp pool, Russell County, Kansas, and has moved rig to new location. The well was completed for 55 bbl. daily from the Arbuckle lime at 3,365 ft. Owners are Henry Bennett, Augusta, and Chet Roberts, Russell, Kans.

C. T. McLAUGHLIN & CO., Inc., Midland, Tex., is contractor and joint operator with Cosden Petroleum Corp. in the drilling of 1 Griffin, a wildcat test in Section 26, Block 28, T.&P. Survey, Mitchell County, Texas. The test, scheduled for 3,000 ft., is on a farmout from Shell Oil Co., Inc.

FALCON-SEABOARD Drilling Co., Tulsa, is skidding its rig on 1 Holmes, in 1-20-14w, Barton County, Kansas, to drill a new hole after losing the first at 1,960 ft.

TWO STATES Drilling Co., Houston, Tex., drilling for Ohio Oil Co. in the Orange Hill area, Austin County, Texas, reached a depth of 9,510 ft. in 1 First National Bank. Additional showings in the Wilcox were logged at intervals from 9,297-9,309 ft. Drill-stem testing the previous week at 9,084-9,137 ft. showed possible gas-distillate production.

W. B. OMOHUNDRO, Wichita Falls, Tex., has been given the contract to drill a 7,500-ft. Ellenburger lime wildcat test for L. C. Youngblood of Oklahoma City, Okla., and R. L. Foree of Dallas, Tex., 6 miles north of Montague, Montague County, Texas. Rig is being moved in. The test is 1½ miles south of the Clingingsmith pool.

MARTIN & MANNING have moved in a rotary rig to drill a wildcat test for Continental Oil Co. in the Flint Hill area on the upper end of the Chilson anticline, Fall River County, South Dakota.

FALCON-SEABOARD Oil Co., Houston, Tex., has started drilling operations on a wildcat for Gulf Refining Co. near Houma, Terrebonne Parish, Louisiana.

STOLS Drilling Co., Denver, Colo., is drilling a wildcat test on the Elk Creek structure, 10 miles north of Rapid City, in Meade County, South Dakota. Location is on the Ernest Gingras ranch. A combination rotary and cable-tool rig is being used.

Contractors to Meet In Tulsa Next Month

The American Association of Oil-well Drilling Contractors will hold its second annual meeting in Tulsa at the Mayo Hotel, November 19 and 20. A complete program will be announced in the next few weeks.

The drilling industry has for some time been attempting to adjust itself to changing conditions brought on by the war, and this meeing will recognize the importance of current problems now confronting all contractors.

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Personal Paragraphs

JOHN P. KLEP, manager of the southwest district for Sperry-Sun Well Surveying Co., with headquarters at Fort Worth, Tex., has been commissioned a first lieutenant in the U. S. Army Air Forces and was ordered to report to Miami Beach, Fla., October 1, for training. From Miami Beach he will be assigned to Wright Field, Ohio. Mr. Klep is a graduate of the University of Oklahoma where he was an exchange student from Belgium, his native land.

HUGH ENGLRBRECHT, formerly secretary of the Tulsa Engineers Club, Tulsa, now is a captain in the Army Air Corps stationed at Lubbock, Tex.

W. W. O'NEILL, JR., former pumper in the Seminole, Okla., area, for Cities Service Oil Co., is a flight commander in the Army Air Corps in Egypt.

R. W. HOFSESS, former pipe-line superintendent, Cities Service Oil Co., Bartlesville, Okla., but now in the U. S. Army, has been promoted from captain to major. He is stationed at Galveston, Tex.

PHILLIP R. PHILLIPS, son of L. E. Phillips, cofounder of Phillips Petroleum Co. and recently assistant sales manager, Bartlesville, Okla., has been commissioned a lieutenant in the U. S. Navy.

DR. A. J. GOODMAN, associated with the supervisory mining engineer at Calgary, Alberta, Canada, prior to 1931, recently arrived in Ottawa from the Trinidad fields and will enter the Dominion government service.

JOHN B. MORRIS, assistant to the vice president, Shell Oil Co., Inc., Los Angeles, Calif., for several months, has been appointed administrative assistant in the headquarters of the company in San Francisco.

T. C. McCOBB, controller and director, Standard Oil Co. of New Jersey, New York, was elected president of the Controllers Institute of America at its eleventh annual national convention in Chicago. He has been affiliated with the Standard company since 1928, and has been its controller since 1933. Previously he was secretary-treasurer, Imperial Oil, Ltd., Sarnia, Ont. He has been a director of the Controllers Institute since 1939.

MAURICE W. KENNEDY, formerly lease man in the land department, the Texas Co., Midland, Tex., who lately has been in an officers' training camp, has been commissioned a second lieutenant in the Army and assigned to an infantry division for line duty.

VERN A. BELLMAN, former football star at University of Washington, and who was at one time district manager of General Petroleum Corp. for the Los Angeles, Calif., district, has been appointed resident manager of the Washington district and will maintain offices in Seattle, Wash.

JOEL A. LIPSCOMB, Philadelphia, Pa., has accepted an appointment by the State Department to be petroleum adviser to the Government of Paraguay and is now en route to Asuncion, that country's capital, to take over his new duties. In order to accept the appointment, Mr. Lipscomb was released from the legal department of Atlantic Refining Co., with which he has been connected for the last 20 years. For his new appointment he is considered to be peculiarly well fitted, because of his experience in Latin-American affairs and particularly in legal matters south of the Rio Grande. He has resided in Mexico, Venezuela, Colombia, and Cuba.

JOHN F. HUNTER, marine department, Atlantic Refining Co., Philadelphia, Pa., has been elected treasurer of the Maritime Society.

WALLIE INGRAM, driller-producer in Michigan, is now a member of the armed forces. He is a private at Camp Swift, Texas.

GLENN GALBREATH, formerly a geologist, Tulsa, has been made a staff sergeant in the 125th Observation Squadron, Army Air Corps, De Ridder, La.

J. H. DUNN, vice president and general manager, Shamrock Oil & Gas Corp., Amarillo, Tex., is featured in the current issue of Natural Gasser, published by Warren Petroleum Corp.

DOUGLASS ORME, traffic manager, Cosden Petroleum Corp., Big Spring, Tex., has been appointed a member of the joint tank-car subcommittee representing District 3, Office of Petroleum Coordinator.

FRED A. (TED) DEVINE, district geologist, Pure Oil Co., Amarillo, Tex., has been transferred to the Tulsa office of the company. He is being succeeded at Amarillo by C. R. WAGNER, who has been his assistant.

S. F. SHAW, San Antonio, Tex., consulting petroleum engineer and authority on air-gas lift, has become associated with the petroleum engineering department of the Agricultural & Mechanical College of Texas at College Station.

JAMES S. BLACKMAN, formerly deputy conservation officer for the Oklahoma Corporation Commission, Oklahoma City, Okla., recently was graduated from the Army Air Corps school at Miami Beach, Fla., with a commission as first lieutenant. He now is stationed at Sacramento, Calif.

Do You Remember?

From The Oil and Gas Journal Files

40 YEARS AGO

Anse La Butte dome, in St. Martin Parish, Louisiana, 5 miles north of Lafayette, looms as an important new field discovery for the Gulf Coast following showings of oil and gas in shallow tests now drilling. The new strike bears out theories that oil exists at various points between the Texas fields and the Mississippi River.

Shipments of crude oil and refined products by tanker from Gulf Coast ports continue to increase. Domestic movement during the year ended October 1 totaled 55,251,765 gal. Export shipments during the same period were 16,834,460 gal.

25 YEARS AGO

It is understood that President Wilson, before fixing prices on oil and oil products for use by the Government in carrying on its war program, will confer with leading oil men and get their opinions. Data are being gathered as to cost of production.

From Denver comes assurances that the State of Colorado is to help develop a great oil boom. State lands have been leased to prospective operators to the extent of 146,724 acres. On some of the leases drilling operations already are under way.

Rumanian oil wells, destroyed by the Russians last year and later redrilled by German invaders, are said to be producing full capacity again. As a result, it is expected that oil shortage in Austria and Germany will be remedied to a large extent.

10 YEARS AGO

Oil theft investigating organization is created by the Railroad Commission in East Texas to curb violations of proration regulations.

Standard Oil Co. of Indiana and its subsidiary, Stanolind Oil & Gas Co., absorb all assets and operations of Midwest Refining Co., including refineries in Wyoming and Utah, producing and undeveloped leaseholds in Colorado, Wyoming, Montana, Kansas, and New Mexico, pipe lines, gasoline plants, and other properties.

MAJ. FREEMAN BURFORD, Dallas, Tex., independent operator, is now stationed with the U. S. Army in New York.

ALBERT FINSTON, former oil producer, Tulsa, is a major in the U. S. Army, and is assigned to the Port of Embarkation office, New York.

JULE H. WALKER, geologist and scout, Superior Oil Corp., Houston, Tex., has resigned to become associated with Ohio Oil Co. as geologist at San Antonio, Tex.

RUSSELL S. TARR, geologist, Tulsa, has accepted a commission as captain in the intelligence department of the U. S. Army Air Force and will leave soon to enter training schools of that branch of the service.

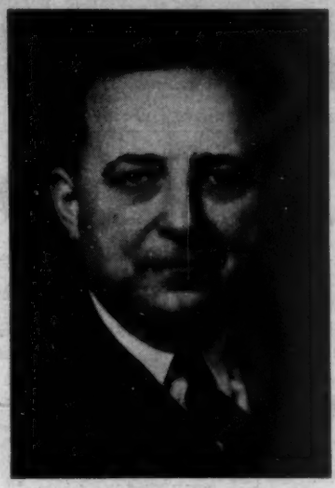
VICTOR CALDER, son of William Calder, formerly director of the Petroleum and Natural Gas Division for Alberta, Canada, who was in Singapore before its capture by the Japanese, is reported to have reached Australia safely.

GROVER C. WILSON, fuel research engineer, automotive and aircraft department, research and development laboratories, Universal Oil Products Co., Chicago, and W. M. HOLADAY, automotive research engineer, Socony-Vacuum Oil Co., Inc., New York, are among the nominees for vice presidencies of the Society of Automotive Engineers, Inc., for 1943. Mr. Wilson was nominated as diesel-engine vice president, and Mr. Holaday for fuels and lubricants.

L. W. BENNETT, vice president and treasurer, Sunray Oil Co., Tulsa, has been elected president of the Petroleum Accountants Society of Oklahoma, succeeding F. T. ANDERSON, Darby Petroleum Corp. Other officers are: J. B. GALBRAITH, comptroller, Stanolind Oil & Gas Co., first vice president; E. D. LOUGHNEY, accountant, Gulf Oil Corp., second vice president, and E. W. STEWART, accountant, Amerada Petroleum Corp., secretary-treasurer. In addition to Mr. Stewart and Mr. Loughney, M. A. WILSON, Cities Service Oil Co., Bartlesville, Okla., was elected a director.

Stays in War Work

In August 1940 Channing Rice Dooley, manager of industrial relations of Socony-Vacuum Oil Co., Inc., New York, was loaned to the old National Defense Advisory Commission for 3 months to inaugurate a "Training Within Industry" program. Instead of staying just 3 months, he has been in Washington, D. C., ever since, with the organization he built up as director continuing to operate successively under the Office of Production Management, the War Production Board, and, more recently, as a division of the War Manpower Commission.



CHANNING RICE DOOLEY

Mr. Dooley, who is the only oil-company representative in the executive personnel of the War Manpower Commission, gained recognition during World War I for similar responsibilities when he was education director for the Education and Special Training Committee for the War Department.

As manager of industrial relations with Socony-Vacuum Oil Co., Inc., Mr. Dooley paid particular attention to institution of training work. His connection with the company dates to the days of the Standard Oil Co. of New York, with which company he became associated in 1929.

Preceding this, he was with the Standard Oil Co. of New Jersey, which he joined in June 1919, as personnel and training director. He was largely responsible for the development of this company's complete and well-rounded industrial relations program, which included a thorough training branch.

Mr. Dooley is a graduate of Purdue University, obtaining an electrical engineering degree in 1900. After 2 years of post graduate work he joined Westinghouse Electric Co., in 1902, as a designer of electric machines. He became interested, however, in training work and in his spare time reorganized the company's Casino Technical Night School. Since, he has directed his efforts along this line.

He was born in Rockville, Ind., April 4, 1878. He is an active member of various technical, vocational, and education societies and other organizations.

HAROLD R. SELLS, petroleum engineer, Kerlyn Oil Co., Oklahoma City, Okla., has been transferred to Effingham, Kans.

DONALD M. ANDERSON, Shell Oil Co., Inc., who has been division foreman in the production department for Los Angeles Basin, has been appointed engineer and transferred to the company's Wilmington, Calif., refinery.

LOWELL O. GREEN, formerly assistant production superintendent, Tropical Oil Co., Barranca-Bermeja, El Centro, Colombia, South America, has returned to this country where he is in service with the U. S. Army Engineers Corps at Fort Leonard Wood, Missouri.

G. E. LEWTAS, formerly manager of the Saskatchewan and Alberta divisions, and later manager of the Quebec division, British-American Oil Co., Toronto, Canada, has been appointed manager of the eastern divisions of the company. J. C. HALL has been named manager of the western divisions. Both will make their headquarters in Toronto.

R. L. (LESLIE) LEE has been elected president and treasurer of Lee Petroleum Corp. of San Angelo, Tex., succeeding his father, the late C. V. Lee, who died May 7. MRS. J. W. JONES of San Angelo was chosen vice president, succeeding R. L. Lee, and MRS. W. G. VOLKMAN was elected a director, taking the late Mr. Lee's place on the board. Both are daughters of the late president.

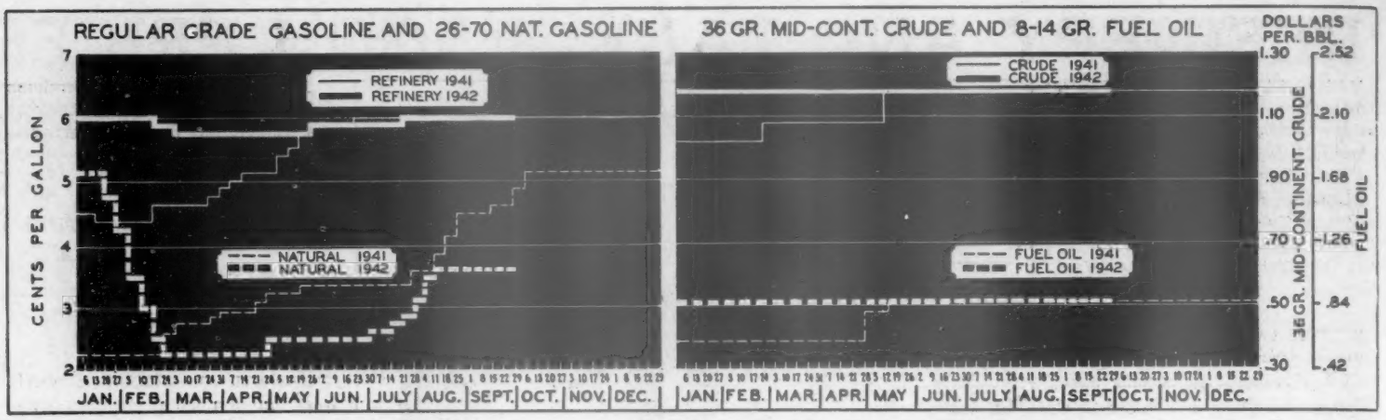
P. G. ANDERSON, traffic manager of Lion Oil Refining Co., El Dorado, Ark., has left for Washington, D. C., to be associated with the Office of Petroleum Coordinator, serving in the Transportation Division. He has been granted a leave of absence by the Lion company and will return to his duties in El Dorado after completion of his task in the capital. He has been actively engaged during recent months in activities connected with transportation problems, having served on the tank-car committee of ODT, the tank-car committee for Districts 1, 2 and 3 of OPC, and other committees.

L. R. HODELL, director of production research for the Carter Oil Co., left Tulsa last week to join the nation's fighting forces. He will go to training camp as a member of the Voluntary Officer Corps before being assigned to an arm of the service. Mr. Hodell has made numerous contributions to the science of producing oil and has directed others in the development of equipment and techniques. Probably his most outstanding accomplishment has been the field welding of oil-well casing, for which he developed the technique used at present. His successor as head of Carter's research organization has not yet been announced.

HILAND G. BATCHELLER, president of the Allegheny-Ludlum Steel Corp., Pittsburgh, Pa., has been made head of the Iron and Steel Branch, War Production Board. He succeeds REESE H TAYLOR, president of the Union Oil Co. of California, recently resigned.

HELEN J. CHAMBERS, daughter of JOHN J. CHAMBERS, independent operator of Chanute, Kans., has been selected to become an officer in the Navy WAVES and will receive her training in Smith College. Two sons of Mr. Chambers are also in the service.

Shifts: A. E. McDANIEL, superintendent, Olson Drilling Co., Fort Smith, Ark., to Pauls Valley, Okla.; W. DOW HAMM, engineer, Shell Oil Co., Inc., Houston, to Atlantic Refining Co., Dallas, Tex.; T. B. YOUNG, engineer, Gulf Oil Corp., Hamshire to Daisetta, Tex.; BOSE GORMAN, engineer, Gulf Oil Corp., Fort Worth to Houston, Tex.; J. E. CLARK, geologist, Ohio Oil Co., Holton, Kans., to Falls City, Neb.; W. H. ADDINGTON, engineer, Sloan & Zook Co., Osawatomie, Kans., to Golden, Colo.; DAVE BLAKER, superintendent, Phillips Petroleum Co., Webb City, Okla., to Mission, Kans.; HARRIS BATEMAN, purchasing agent, Cities Service Oil Co., Bartlesville, Okla., to New York City; E. H. ROY, superintendent, Cities Service Oil Co., East Chicago, Ind., to New York City.


REGULAR GRADE GASOLINE AND 26-70 NAT. GASOLINE
REFINERY 1941
REFINERY 1942
NATURAL 1941
NATURAL 1942
CENTS PER GALLON
JAN. FEB. MAR. APR. MAY JUN. JULY AUG. SEPT. OCT. NOV. DEC.
36 GR. MID-CONT. CRUDE AND 8-14 GR. FUEL OIL
CRUDE 1941
CRUDE 1942
FUEL OIL 1941
FUEL OIL 1942
DOLLARS PER BBL.
36 GR. MID-CONTINENT CRUDE
FUEL OIL
JAN. FEB. MAR. APR. MAY JUN. JULY AUG. SEPT. OCT. NOV. DEC.

MARKET DEVELOPMENTS . . .

Mid-Continent

DEMAND for refinery products at Mid-Continent refineries this week gave no evidence of unfavorable reaction from the imminence of rationing. Some refiners considered that plans to start rationing the latter part of next month has served to stimulate interest of buyers. There is a "last fling" attitude apparent among motorists in several sections of the country although voluntary conservation of rubber is reflected in gasoline-tax returns from most states.

The Internal Revenue Bureau reported last week that gasoline-tax collections in August indicated a decline of approximately 25 per cent in the nation's motor-fuel consumption. This decline spread over the entire country indicates conclusively that voluntary conservation of rubber has reduced general civilian driving by substantial degree.

Purchasers patronizing Mid-Continent refiners continued their strong interest in gasoline but were particularly anxious to obtain additional supplies of all grades of fuel oil. There is an acute shortage of available fuel oil in the interior refining centers. Manufacturers are unwilling to sell beyond contract commitments because of the possibility that the Office of Price Administration will elevate market ceilings to defray higher costs incurred in producing larger quantities of fuel oil.

Lubricating-oil sales have tapered off slightly, probably in sympathy with curtailed driving and an inclination of motorists to defer crankcase changes at the current method of operating automobiles at lower speeds.

East Coast

NEW YORK.—Steps to increase the waterborne movement of oil products into the East Coast shortage area are expected to precipitate relief within the next 2 months. These include the conversion of river barges and port improvements at Buffalo which will make it possible for that port to accommodate deep-draft vessels. The first of a river barge fleet that will have a carrying capacity of 5,000,000 bbl. is scheduled to go into operation during the latter part of November. In addition to the Buffalo port improvements, New York Barge Canal facilities are being rehabilitated to increase the flow of oil.

The possibility of reducing gasoline rations in the East was revived last week when the Office of Petroleum Coordinator directed oil companies to raise their proportion of fuel-oil deliveries at the expense of gasoline. Any reduction in deliveries of the latter will necessitate a reduction in ration-coupon values unless voluntary measures achieve the same effect. However, it is regarded as improbable that such steps will be taken before start of the third rationing period on November 22.

A belated but still small increase in the number of residential conversions from oil to coal heating units is apparently under way. While some 25,000,000 bbl. have been gained by industrial conversion, total changes in home heating units have amounted to approximately 4 per cent. The slight improvement in residential conversions coincided with the arrival of the first weather sufficiently cool to require the use of heating units through a large part of the northeastern consuming area. The early arrival of such weather was regarded as a possible indication of a long, cold winter that would be accompanied by excessive fuel-oil demands. The 33⅓ per cent cut in fuel-oil deliveries, supplanting one of 25 per cent, indicates the situation is more serious than previously believed.

SENTENCE SUMMARIES

MID-CONTINENT: Imminence of gasoline rationing fails to retard interest in gasoline and fuel oil. Prices steady.

EAST COAST: Distributors and consumers center interest on fuel oil. Nine companies instructed to ship maximum of fuel oil to New England.

GULF COAST: Lend-lease business continues brisk. Refiners report no material change in demand, prices firm.

PACIFIC COAST: Motor gasoline unstable. Price concessions reported from several suppliers. Fuel-oil markets strong at ceiling prices.

PENNSYLVANIA: Demand for neutral oils increasing with advent of winter temperatures.

A.P.I. REFINERY REPORT

Week Ended September 19, 1942

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks Gasoline	Residual	Gas oil
Appalachian	172	2,928	523	678
Ind., Ill., Ky.	779	14,200	3,522	6,060
Okla., Kans., Mo.	366	6,759	1,353	1,884
Censored area*	1,591	38,640	18,731	22,948
Rockies	106	1,805	566	464
California	699	16,461	54,840	12,408
Total Sept. 19, 1942	3,713	80,793	79,335	44,442
Total Sept. 12, 1942	3,710	81,758	78,633	43,567
Total Sept. 20, 1941	4,047	79,195	93,919	50,595

Note: Refinery runs and stocks for week ended September 26, 1942, appear on Trends page.

*Reports combined on East Coast, Texas Gulf, Louisiana-Arkansas and Inland Texas at request of OPC.

CRUDE-OIL STOCKS

(Bureau of Mines estimate)

Week ended:	Bbl. of crude*
September 19, 1942	244,294,000
September 12, 1942	244,671,000
September 20, 1941	246,500,000

*Excludes heavy, unrefinable stocks in California.

Gulf Coast

HOUSTON, Tex.—Refined prices of all petroleum products in the Gulf Coast market were holding firm in spite of a comparatively quiet week of trading. The slowing down of activity is only temporary and is believed caused by a changeover in the transportation setup which is developing as suppliers are attempting to adjust their fuel-oil shipments in order to meet the heavy demand on the East Coast. All grades of fuel oils are said to be extremely scarce in the Gulf Coast as the result of heavy lend-lease business during the past few months, and it cannot be determined at this time how much of this material can be moved weekly.

As an all-out effort is being made to boost fuel-oil shipments, it is predicted in some quarters that a weakening of natural-gasoline prices will develop. However, this seems unlikely in view of the fact that only a limited number of tank cars will be available for gasoline movement and those fortunate enough to obtain cars will have little trouble in obtaining ceiling prices.

Pacific Coast

LOS ANGELES, Calif.—Highly competitive conditions resulted in the shading of gasoline prices by California refiners last week. The tendency is toward lower prices in the spot market, reflecting decreased demand incident to the fall season. With the exception of two days early in the month when it appeared gasoline rationing might be invoked immediately, the market has been quiet. On these two days, the majority of motorists filled their gasoline tanks in anticipation of rationing and created a false demand.

Fuel-oil demand has been increasing during the past several months and a recent check indicates railroads are operating at the highest rate in history. There is nothing to indicate any appreciable change in the present rate of consumption until additional locomotives are obtained.

There is very little diesel fuel and gas oil available in the open market. Trading is limited and featureless because of supply shortages.

Prices for lubricants appear to be fairly well established. Increasing amounts are going out to the trade in bulk as the industry exhausts its irreplaceable supply of cans.

Natural gasoline is stagnant in the spot market. Curtailment of production in light-gravity oil fields has reduced natural production.

REFINERY AND TANK-WAGON PRICES

(Prices as of September 29)

Refinery Gasoline

Octane (A.S.T.M.):	†80	78	74-76	72-74	68-70	63-66	60 & lower
Mid-Continent*				5.875-6.000		5.500-5.625	5.125-5.250
Pennsylvania			6.750-7.000				
Gulf Coast‡	6.00-6.50			§5.750-6.250	§5.750-6.250	§5.250-5.750	§5.000-5.500
Northeast Coast	9.80			9.2	9.2		
Pacific Coast		6.500-7.000	6.250-6.500	6.125-6.250	5.750-6.000	5.125-5.250	4.750-5.000

*Basis Group 3. †1939 C.F.R. (research method). ‡Integrated companies restricted to lowest prices. §Unleaded.

Quotations are f.o.b. plant in cars and in cents per gallon except where otherwise noted. They are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils, and do not include marine lighterage charges.

Natural Gasoline

Grades:	26-70	18-55	75-85(350-375)
Oklahoma (Group 3)	3.625	4.350	
North Texas	3.250	3.900	
North Louisiana	3.375	4.050	
California			4.875-5.500

Kerosene and No. 1 Fuel Oil

Gravity:	46	45	42-44	41-43	38-40
Mid-Continent*			4.500	4.375	
North Louisiana				4.500-4.750	
Pennsylvania	6.250-6.625	6.125-6.250			
California				4.500-5.500	4.250
Northeast Coast				6.80	
Gulf Coast				3.875	

*Basis Oklahoma Group 3.

Tractor, Diesel, and Bunker Fuel Oil

Specifications:	46-48° G.	24 D.I.	48-52 D.I.	58 & above	Diesel bunkers	Bunker C
Mid-Continent*	4.125				‡$1.35-1.45	$0.85-0.90
California		2.750-4.000				
Gulf Coast			4.000	4.125	1.45	0.85
Northeast Coast				6.800	2.780	1.65
North Louisiana						†0.80-0.85

*Basis Oklahoma Group 3. †10-14° gravity. ‡Pacific Specification 200.

Furnace Oil, Gas Oil, Fuel Oil

	No. 2	No. 3	No. 5	No. 6
Mid-Continent*	3.625-3.750	3.500-3.625	$0.85	$0.85
Pennsylvania (West)	5.875-6.125	5.875-6.000	†5.250-5.500	
Northeast Coast	6.7	6.7	1.95	1.65
Pacific Coast	5.5	5.5	‡0.80-95	§0.80
Gulf Coast	3.875-4.0		1.65	0.85

*Basis Oklahoma Group 3. †36-40 gravity fuel oil. ‡Pacific Specification 300. §Pacific Specification 400.

Lubricating Oils

Bright and Steam Refined

OKLAHOMA (Group 3)—		
200-210 D, 10-25		27.00
150-160 D, 0-10		23.00
120-125 D, 0-10		22.00
Steam refined:		
600 dark green (untreated)	9.00	9.50
PENNSYLVANIA—		
Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		30.50
15 pour point		29.50
25 pour point	25.00	28.00
Steam refined:		
600	15.00	16.00
650	15.50	16.50
600 flash	16.00	17.50
650 flash	17.00	17.50

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—	
0-10 pour point:	
200-3	15.00
300-3	18.00
500-3	19.50
600-3	20.00
Note: Viscous neutrals, 10-25 pour, quoted 0.5 cent under 0-10 oils.	

Wax

(Cents per pound)

OKLAHOMA (Group 3)—	
124-126 (A.m.p.) w.c. scale	4.250
PENNSYLVANIA (inland refineries)—	
122-124 (A.m.p.) w.c. scale	4.250
124-126 (A.m.p.) w.c. scale	4.250

Neutral Oil

CALIFORNIA		
Pale oils:		
200-2½-3	7.00	7.75
400-3-4	7.25	8.00
600-3-4	8.75	11.00
Red oils:		
200-4-5	7.00	7.75
400-5-6	9.00	11.00
500-900, 5-6½	9.25	11.25
GULF COAST—		
Pale oils:		
200-3	8.50	8.75
300-3	9.00	9.25
500-3½	9.75	10.00
750-3½	10.00	10.25
2,000-4	10.50	10.75
3,000-4	12.25	12.50
PENNSYLVANIA—		
150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		37.50
10 pour point		36.50
15 pour point		35.50
25 pour point		30.00
200 vis., at 70° F., 3 color:		
Zero pour point		39.50
10 pour point		38.50
15 pour point		37.50
25 pour point		32.00
NEW YORK—		
Wax in bags fully refined:		
130-132 (A.m.p.) wax		5.850
133-135 (A.m.p.) wax		6.150
Crude scale:		
124-126 (A.m.p.) w.s.		4.250
124-126 (A.m.p.) y.s.		4.250

EXPORT PRICES

Gasoline—60-62° Gravity, Maximum 400 End Point

Octane:	72-74	68-70	65-66	60
Gulf Coast	6.500	6.250-6.500	5.875	5.625
Pacific Coast		6.125-6.500	5.875-6.000	5.500-5.625

Distillate and Fuel Oil

	Kerosene	Diesel fuel				Bunker
	41-43	24 G.	48-52 D.I.	58 D.I.	Bunkers	C grade
Gulf Coast	4.000-4.250		4.125-4.375	4.375	$1.65-80	$0.85-95
Pacific Coast	4.750-5.000	1.25-30			†1.35-45	*0.80-90

*Pacific Specification 400. †Pacific Specification 200.

Lubricating Oils

	Neutral oils		Bright and cylinder stocks		
	200-3	150-3	200-3	150-3	600&630 S B
Mid-Continent	16.8		28.8	24.8	
Pennsylvania	43-50	41-46	36-37	36-37	26.5-27

GASOLINE AND KEROSENE TANK-WAGON PRICES IN 50 CITIES

(Gasoline prices based on regular grades, tax included, undivided dealer)

ATLANTIC AND NEW ENGLAND

(Socony-Vacuum Oil Co., Inc., and Atlantic Refining Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Baltimore, Md.	15.45	5.50	10.20
Boston, Mass.	14.90	4.50	9.50
Burlington, Vt.	16.90	5.50	
Buffalo, N. Y.	16.20	5.50	10.30
Dover, Del.	16.70	5.50	11.20
Hartford, Conn.	15.60	4.50	
Manchester, N. H.	17.30	5.50	10.50
Newark, N. J.	14.70	4.50	9.40
New York, N. Y.	16.10	5.60	9.50
Philadelphia, Pa.	16.20	5.50	11.65
Pittsburgh, Pa.	16.70	5.50	12.00
Portland, Me.	16.30	5.50	9.60
Providence, R. I.	15.00	4.50	9.30
Washington, D. C.	14.70	3.50	10.70
Average 14 cities	15.91	5.07	10.32

(All prices undivided dealer basis.)

CENTRAL

(Standard Oil Co. of Indiana, Standard Oil Co. of Ohio, Continental Oil Co. and Texas Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Chicago, Ill.	13.40	4.50	10.30
Cleveland, Ohio	15.00	5.50	*9.00
Dallas, Tex.	13.00	5.50	7.00
Des Moines, Iowa	14.40	4.50	9.80
Detroit, Mich.	14.40	4.50	9.60
Fargo, N. D.	16.90	5.50	11.30
Huron, S. D.	16.30	5.50	10.70
Indianapolis, Ind.	15.20	5.50	9.80
Little Rock, Ark.	17.50	8.00	10.00
Milwaukee, Wis.	16.10	5.50	10.50
Minneapolis, Minn.	15.40	5.50	10.30
Omaha, Neb.	15.40	6.50	9.80
Tulsa, Okla.	16.50	7.00	8.50
Wichita, Kans.	12.70	4.50	8.00
Average 14 cities	15.15	5.57	9.61

*Includes 1-cent state tax.

SOUTHEASTERN

(Standard Oil Companies of New Jersey, Kentucky, and Louisiana)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Atlanta, Ga.	21.40	7.50	11.40
Birmingham, Ala.	18.50	8.50	9.00
Charleston, S. C.	18.45	7.50	
Charleston, W. Va.	18.75	7.50	13.00
Charlotte, N. C.	19.60	7.50	11.00
Jacksonville, Fla.	21.40	8.50	10.40
Jackson, Miss.	17.50	7.50	8.50
Louisville, Ky.	16.50	6.50	8.50
Memphis, Tenn.	18.60	8.50	10.50
New Orleans, La.	16.75	8.50	*10.50
Norfolk, Va.	16.95	6.50	13.50
Average 11 cities	18.58	7.59	10.58

*Includes 1-cent state tax.

MIDWESTERN

(Continental Oil Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Albuquerque, N. M.	17.50	7.50	10.00
Boise, Idaho	20.10	6.50	16.30
Casper, Wyo.	17.00	5.50	12.00
Denver, Colo.	14.50	5.50	11.00
Helena, Mont.	17.00	6.50	13.00
Phoenix, Ariz.	18.50	6.50	12.50
Reno, Nev.	17.50	5.50	13.50
Salt Lake, Utah	18.50	6.50	14.50
Average 8 cities	17.58	6.25	12.81

PACIFIC COAST

(Standard Oil Co. of California)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Portland, Ore.	17.00	6.50	13.50
San Francisco, Calif.	14.50	4.50	11.50
Seattle, Wash.	17.00	6.50	13.50
Average 3 cities	16.17	5.83	12.83
Average 50 cities	16.57	5.96	10.76
Average last week	16.57	5.96	10.76

CRUDE-OIL PRICES

(Continued from Page 69)

Gulf Refining Co., 5-21-41, includes Rodessa, Texas.

COLUMN (4) EAST CENTRAL:
Humble Oil & Refining Co., 5-21-41. Includes Anderson, Cherokee, Limestone, and Navarro counties and the Navarro Crossing field.

COLUMN (5) EAST CENTRAL:
Humble Oil & Refining Co., 5-21-41. Includes Hawkins field.

COLUMN (6) NORTH TEXAS:
Stanolind Oil Purchasing Co., 12-11-41.

COLUMN (7) FISHER COUNTY:
Shell Oil Co., Inc., 12-11-41.

COLUMN (8) MEXIA:
Sinclair Prairie Oil Marketing Co., 5-30-41.

TEXAS FLAT-PRICE FIELDS

Agua Dulce (light), Benavides, Longhorn, Southland, and Sweden, 5-21-41 ..... $1.35
Agua Dulce (heavy), 10-16-41 ..... $1.25
Republic Oil Refining Co., 5-21-41.

Alfred and Magnolia City $1.35
Continental Oil Co., 5-21-41.
Alice, Benavides (North Sweden), Ben Bolt, Clark-Mull, Sun, and Tom Graham $1.35
Humble Oil & Refining Co., 5-21-41.
Batson (new), Humble (35° and above), Fig Ridge, Hardin, Hull (25° and above), La Belle, North Dayton (25° and above), Seabreeze South China, West Orange, Willow Slough and Oyster Bayou $1.25
Sun Oil Co., 5-21-41.
Cass County $1.20
Texas Co., 5-21-41.
Cayuga, Anderson County $0.90
Pan American Production Co., 5-21-41.
Chapel Hill, Smith County:
Crude distillate $1.30
Crude oil 1.18
Chapel Hill Gas System, 11-7-41.
Clay Creek, Washington County $1.00
Sun Oil Co., 5-21-41.
Cleveland, Liberty County $1.26
Magnolia Petroleum Co., 5-21-41.
Conroe, Montgomery County $1.43
Humble Oil & Refining Co., 5-21-41.
Tide Water Associated Oil Co., 5-21-41.
Sun Oil Co., 5-21-41.
Texas Co., 5-21-41.

Cotton Lake (South) $1.35
Sun Oil Co., 5-21-41:
East Texas and Flag Lake* $1.25
Humble Oil & Refining Co., 5-21-41.
Pan American Production Co., 5-21-41.
Tide Water Associated Oil Co., 5-21-41.
Gulf Refining Co., 5-21-41.
Magnolia Petroleum Co., 5-21-41.
Sinclair Prairie Oil Marketing, 5-21-41.
Shell Oil Co., Inc., 5-20-41.
Sun Oil Co., 5-21-41.
Texas Co., 5-21-41.
Stanolind Oil Purchasing Co.
Esperson (35° and above), South Esperson $1.30
Sun Oil Co., 5-21-41.
Flour Bluff, East Flour Bluff $1.33
Humble Oil & Refining Co., 5-21-41.
Hockley and Cochran $0.87
Texas Co., 5-21-41.
Livingston and Mercy $1.25
Shell Oil Co., Inc., 5-20-41.
Long Lake $1.23
Sinclair Prairie Oil Marketing, 5-21-41.
Luby $1.35
American Mineral Spirits Co., 5-21-41.
Luling $1.05
Magnolia Petroleum Co., 5-21-41.

Lytton Springs $1.17
Magnolia Petroleum Co., 5-21-41.
Salt Flat, North Salt Flat, Darst Creek*, Hilbig, Clark, Carroll, and Zoborski $1.14
Humble Oil & Refining Co., 5-21-41.
Magnolia Petroleum Co., 5-21-41.
Texas Co., 5-21-41.
Rincon (North), Sun, North Sun and Garcia $1.35
Sun Oil Co., 5-21-41.
Yturria $1.45
Sun Oil Co., 3-19-42.
Talco $0.70
Humble Oil & Refining Co., 5-21-41.
Magnolia Petroleum Co., 5-21-41.
Tomball and Satsuma $1.40
Humble Oil & Refining Co., 5-21-41.
Magnolia Petroleum Co., 5-21-41.
Stanolind Oil Purchasing Co., 4-1-41.
Van, Van Zandt County $1.08
Humble Oil & Refining Co., 5-21-41.
Pure Oil Co., 5-21-41.
Yates (regular) $0.95
Humble Oil & Refining Co., 5-21-41.
Gulf Refining Co., 5-21-41.
Shell Oil Co., Inc., 5-20-41.
Yates (shallow) $0.83
Shell Oil Co., Inc., 5-20-41.

Southwest Texas

(Continued from Page 59)

Fields

Midway, San Patricio County: British American 2 Mullen, 132 bbl., ⅛-in. choke, perf. casing 6,085-91 ft., T.D. 6,140 ft.

LAREDO DISTRICT

Wildcats

Duval County: J. Camp 1-B Dunn, dry, T.D. 5,004 ft.
Texon Royalty Co. 1 Holzapfel, dry, T.D. 1,207 ft.
Starr County: Sun 1 Cruz Solis, dry, T.D. 2,922 ft.

Fields

Boyle, Starr County: Fidelity Oil & Royalty Co. 1-D Sugarland Industries, dry, T.D. 4,402 ft.
Driscoll, Duval County: Continental 8-B Driscoll, 242 bbl., ¼-in. choke, perf. casing 2,982-94 ft., T.D. 2,993 ft.
Rincon, Starr County: Continental 6 Wehrle, dry, T.D. 4,685 ft.
Continental 60-H Slick, 226 bbl., ⅛-in. choke, perf. casing 3,957-72 ft., T.D. 3,997 ft.
Seven Sisters, Duval County: George Lyles 3 Chernosky, 50 bbl., pumping, T.D. 2,257 ft.

SOUTH CENTRAL TEXAS DISTRICT

Wildcats

Wilson County: L. D. Ornsby 1 Rideout, top Georgetown lime 5,193 ft., dry, T.D. 5,216 ft.

Fields

Bee Creek, Caldwell County: R. Ogden 17 Talley, dry, T.D. 2,322 ft.

North Central Texas Fields

(Continued from Page 62)

Wilbarger County: Consolidated 1 E. M. Barnes-H, NW SW Sec. 11, Blk. 7, H.&T.C. Sur., dry, T.D. 4,358 ft.
W. T. Waggoner 1 W. T. Waggoner-KK, NW NW Sec. 10, Blk. 14, H.&T.C. Sur., dry, T.D. 4,735 ft.

Fields

Burkburnett, Wichita County: Martin Properties 4 J. D. Cooper-A, Lot 5, H. Hastie Sur. A-92, potential 61 bbl., pay 1,302 ft., T.D. 1,320 ft.
K.M.A.-Ellenburger, Wichita County: Blackwell Oil & Gas 9-E W. L. Hodges, W. H. Spillers Sur. A-258, flowed 841 bbl., pay 4,219 ft., acid, T.D. 4,300 ft.
E. C. Oil 30-E Mrs Anna Mangold, Lot 34, Mangold sub., P Castleman Sur. A-35, flowed 516 bbl. after acid, pay 4,319 ft., T.P. 4,380 ft.
Kadane-Griffith 1-E J. A. Kemp-B, Lot 3, Blk. 1, K.W.V.F.L. Sur., flowed 1,575 bbl. after acid, pay 4,254 ft., T.D. 4,260 ft.
K.M.A., Wichita County: W. H. Bohner 3-A First National, Lot 10, Sec. 26, K.W.V.F.L. Sur., pumped 20 bbl. after shot, pay 3,715 ft., T.D. 3,862 ft.
Ringgold, Clay County: Continental 4 Spring, SE NE Sec. 24, Blk. 4, H.&T.C. Sur., dry, T.D. 5,878 ft.
Sewell, Young County: S. A. Thompson 5 J. C. Vaughn-A, SE SE Sec. 3, T.&N.O. Sur. A-1248, location abandoned.
Thornberry, Clay County: George W. Graham et al 2 O. T. Roach, Lot 4, F. Longardio Sur. A-287, dry, T.D. 1,175 ft.
Magnolia 1 Duncan fee, Sec. 55, Bacon sub., pumped 51 bbl., pay 1,138 ft., T.D. 1,143 ft.
Wilder Drilling 1 C. T. Taylor, Lot 41, Bacon sub., pumped 61 bbl., pay 1,073 ft., T.D. 1,078 ft.

Miscellaneous

Archer County: L. T. Burns 2 Hasson, SW NW Sec. 165, R. Carson Sur., dry, T.D. 1,276 ft.
L. T. Burns 3 Hasson, NW NW Sec. 165, R. Carson Sur., dry, T.D. 1,307 ft.
Young County: S. D. Glover 1 W. F. Keathley, SE NW Sec. 152, T.E.&L. Sur., dry, T.D. 995 ft.
Mid-Continent 1 A. L. Lynn, J. N. Lisle Sur. A-1938, pumped 10 bbl. after acid, lime pay 4,004 ft., T.D. 4,084 ft.

California Fields

(Continued from Page 61)

hall Potrero field. Then Barnsdall drilled a well south of the originally believed defined limits and succeeded in developing commercial production. This definitely proved the fact that the Ferguson outpost was located on the Newhall Potrero structure. Since that time the Barnsdall has started an offset to the Ferguson outpost and another well between this well and production. The company's 30 Rancho San Francisco is in the pay at 7,175 ft. and should be ready for a production test within another week or 10 days. Top of the first Modelo zone of Miocene age was cored in 30 Rancho San Francisco at 6,245 ft. and top of the third Modelo was found at 6,960 ft. In contrast with original expectations that the Newhall Potrero field might encompass approximately 350 acres, present expectations are that the field will contain not less than 1,000 acres when fully developed. This might be increased by deeper drilling as there is enough Miocene below present depths to sustain several additional productive zones.

COASTAL DISTRICT COMPLETIONS

San Miguelito, Ventura County: Continental Oil Co. 27 Grubb, 23-3n-24w, flowed 399 bbl., 28.6-gravity, 2 per cent cut, 1,423,000 cu. ft. gas, 64/64-in. bean, pressures 200/500 lb., T.D. 7,897 ft., perf. 6,462-6,970 ft., 7,630-7,897 ft., completed in upper and lower Grubb zone of Pliocene age.
Ventura Avenue, Ventura County: Shell Oil Co. 155 Taylor, 30-3n-23w, flowed 2,958 bbl., 29.5-gravity, 3.5 per cent cut, 2,284,000 cu. ft. gas, 128/64-in. bean, pressures 225/500 lb., T.D. 8,810 ft., perf. 7,947-8,807 ft., completed in intermediate Lloyd zone of Pliocene age.

Louisiana Gulf Coast Fields

(Continued from Page 61)

lieved to correlate with the regular sand in the field proper.

LOUISIANA GULF COAST DISTRICTS

Fields

Bayou Sale, St. Mary Parish: Humble 1-E Miama Corp., 190 bbl., ⅛-in. choke, perf. casing 10,345-10,352 ft., T.D. 11,102 ft.
Gueydan, Vermilion Parish: Fohs 6 Mulvey Irrigation Co., 182 bbl., ⅛-in. choke, perf. casing 9,540-57 ft., T.D. 9,928 ft.
Horseshoe Bayou, St. Mary Parish: Texas 7 St. Mary Parish Land Co., 35 bbl. distillate, 10/64-in. choke, perf. casing 10,205-10,210 ft., T.D. 10,952 ft.
Lake Long, La Fourche Parish: Fohs 238 State, 405 bbl., 10/64-in. choke, perf. casing 9,404-09 ft., T.D. 10,302 ft.
Neale, Beauregard Parish: Atlantic 2-E Rice Land & Lumber Co., 226 bbl., 10/64-in. choke, perf. casing 10,994-11,027 ft., T.D. 11,595 ft.
Pine Prairie, Evangeline Parish: Gulf 3-A Schlischer, 288 bbl., 5/32-in. choke, top sand 7,789 ft., perf. casing 7,789-7,810 ft., T.D. 7,815 ft.
Sweet Lake, Cameron Parish: Pure 1-B Miami Corp., dry, T.D. 9,179 ft.
Ville Platte, Evangeline Parish: Gulf 1 Easton Station site, 302 bbl., 10/64-in. choke, perf. casing 8,106-26 ft., T.D. 8,140 ft.
Vinton, Calcasieu Parish: Union Sulphur 5 Gray, dry, T.D. 3,915 ft.

Texas Gulf Coast

(Continued from Page 61)

TEXAS GULF COAST COMPLETIONS

Wildcats

Harris County: Hebert & Smith 1 Hutcheson, dry, T.D. 4,554 ft.

Fields

Barbers Hill, Chambers County: Mills Bennett 4-C Gulf Fisher, 107 bbl., 11/64-in. choke, perf. casing 3,070-82 ft., T.D. 4,719 ft.
Esperson, Liberty County: General Crude 2-A Jajdak, 199 bbl. fluid, 3 per cent salt water, ¼-in. choke, T.D. 9,656 ft., P.B. T.D. 8,182 ft.
Ganado, Jackson County: Texas 1 Robertson-Ross, 112 bbl., ¼-in. choke, perf. casing 5,405-15 ft., 5,370-92 ft., T.D. 6,700 ft.
Livingston, Polk County: Gem 4 Kavanaugh & Collins, 107 bbl., 11/64-in. choke, perf. casing 3,070-82 ft., T.D. 4,719 ft.
Mayo, Jackson County: Texas 1 Simicek, 125 bbl., ⅛-in. choke, perf. casing 5,420-26 ft., T.D. 5,600 ft.
Maurbro, Jackson County: Humble 2 Pritchett, 149 bbl., ⅛-in. choke, perf. casing 5,208-10 ft., T.D. 5,213 ft.
North La Ward, Jackson County: Magnolia 1 W. H. Gordon, 9 bbl. distillate ⅛-in. choke, perf. casing 6,250-53 ft., T.D. 6,504 ft.
Stowell, Jefferson County: Glenn McCarthy 2 McFaddin, 135 bbl., ⅛-in. choke, perf. casing 8,884-87 ft., T.D. 9,308 ft.

Illinois Fields

(Continued from Page 63)

Dundas, Jasper County: Kingwood 1 F. Wilson, E½ SE SW 6-5n-10e, dry at 2,931 ft., Tar Springs 2,266 ft., Glen Dean 2,338 ft., Hardinsburg sand 2,379 ft., Golconda 2,425 ft., Weller 2,600 ft., Benoist 2,720 ft., Aux Vases sand 2,789 ft., Ste. Genevieve 2,847 ft., McClosky 2,877 ft.
East Centerville, White County: Sun 3 Bixenstein, S½ NW NE 7-4s-10e, pumped 230 bbl., 130-qt. shot 2,474-2,525 ft., Tar Springs 2,472-82 ft., T.D. 2,550 ft., P.B. 2,525 ft.
East Centralia, Marion County: Markham Drlg. 3 Edwards Comm., SW NE NE 17-1n-1e, dry at 1,690 ft., Glen Dean 1,464 ft., Golconda 1,537 ft., Barlow 1,624 ft., Cypress sand 1,637 ft.
Geff, Wayne County: Pure 1-A Atteberry, SW NE SE 11-1s-7e, pumped 361 bbl., natural, Aux Vases 3,078-97 ft., T.D. 3,104 ft.
Pure 2-A R. L. Johnson, SW SE NW 12-1s-7e, pumped 211 bbl., natural, Aux Vases 3,054-70 ft., T.D. 3,108 ft.
Keensburg, Wabash County: Navajo Oil 3 Gray, NE NE SE 30-2s-13w, dry at 2,483 ft., Glen Dean 2,228 ft., Golconda 2,324 ft., Barlow 2,437 ft., Cypress sand 2,462 ft.
Louden, Effingham County: Nash Redwine et al 1 Kinsley Comm., SW SW 7-8n-4e, dry at 1,560 ft., Glen Dean 1,381 ft., Cypress 1,504 ft., Weller 1,551 ft.
Russellville, Lawrence County: Phoebus et al 4 Crews, NW NE 19-4n-10w, gaged 50,000 cu. ft. gas, sand 1,075-1,161 ft., pay 1,155-61 ft., T.D. 1,161 ft.
St. Jacob, Madison County: Shell 1 A. S. Frey, SW SW NW 15-3n-6w, pumped 58 bbl. oil and 19 bbl. water, 3,000 gal. acid, reacidized 5,000 gal., 10-qt. shot 2,409-21 ft., 3,000 gal. acid, Trenton 2,388 ft., pay 2,389-2,429 ft., T.D. 2,484 ft., P. B. 2,421 ft.
Obering et al 1 Rhein, SW NE SW 16-3n-6w, pumped 115 bbl., 3,000 gal. acid, Trenton 2,350 ft., T.D. 2,373 ft.
Obering & Bryant 2 H. Buchmann, SW NE SE 27-3n-6w, salt-water disposal well, St. Louis 787 ft., T.D. 985 ft.
Sims, Wayne County: Sinclair 1 Henderson, W½ NW SW 22-1s-6e, dry at 3,259 ft., Glen Dean 2,586 ft., Barlow 2,770 ft., Cypress 2,798 ft., Renault 3,041 ft., Aux Vases 3,052 ft., Ste. Genevieve 3,117 ft., Levias 3,151 ft., McClosky 3,181 ft.
South Lawrence, Wabash County: W. R. White 1 Hershey, NE NW NE 34-2n-12w, temporarily abandoned at 2,025 ft., Waltersburg sand 1,646 ft., Tar Springs 1,656 ft., Glen Dean 1,705 ft., Hardinsburg 1,754 ft., Golconda 1,774 ft., Barlow 1,856 ft., Benoist 2,022 ft.
South Lawrence, Lawrence County: S. W. Mitchell 1 Bartolemy, NE SW NE 26-2n-12w, dry at 1,377 ft., Biehl 1,374 ft.
Sam Malis et al 1 Smith heirs, NE SE SW 27-2n-12w, pumped 50 bbl., 20-qt. shot 2,053-63 ft., Benoist 2,055 ft., T.D. 2,063 ft.
Moindia et al 4 Hershey, SE NW SE 27-2n-12w, dry at 2,023 ft., Glen Dean 1,673 ft., Benoist 2,004 ft., shot collapsed pipe.
Moindia 5 Hershey, SE NE SE 27-2n-12w, location abandoned.
Walpole, Hamilton County: Texas 1-E Cotter, SW NE NW 34-6s-6e, pumped 22 bbl. oil and 3 bbl. water, 20-qt. shot 3,124-34 ft., Aux Vases sand 3,124-32 ft., T.D. 3,138 ft., P. B. 3,134 ft.

Permian Basin, Panhandle

(Continued from Page 58)

Tubb, Section 28, Block B-27, P.S.L. Survey, ¼ mile north and east of production in the link area of the Sand Hills Ordovician pool of southwestern Crane County. The test was bottomed at 5,676 ft. in lime, where operator was running 5½-in. casing.

On a 45-minute drill-stem test at 5,663-76 ft. it recovered 90 ft. of gas-cut drilling fluid, 10 per cent oil. It registered a steady flow of gas throughout the test. A core from 5,663 ft. to 5,676 ft. had returned 6 ft. of dolomite with no porosity but an odor of gas.

SOUTHERN WEST TEXAS COMPLETIONS

Wildcats

Pecos County: William Wolf 1-D University, SW NW Sec. 27, Blk. 16, Univ. Sur., 1½ mi. NE of Taylor Link, dry, T.D. 1,770 ft.
Sutton County: Kingdom Oil 1-X George Allison, SW NE Sec. 91, Blk. 9, T.W.&N.G. Sur., twin to No. 1, junked at 1,147 ft., dry, T.D. 4,676 ft.

Fields

Clara Couch, Crockett County: Robert B. Honeyman 1 Clara Couch, NE NW Sec. 37, Blk. GG, H.E.& W.T. Sur., pumped 326 bbl., acid, anhydrite 1,095 ft., salt 1,155 ft., T.D. 2,230 ft.
McCamey, Upton County: Trebol Oil 2 Ricker, 1,321 ft. from NE line and 3,040 ft. from NW line, Sec. 5, Blk. 4, M. S. Denton Sur., pumped 281 bbl. after acid, T.D. 2,216 ft.
Walker, Pecos County: Cardinal 1-E University, SW SE Sec. 13, Blk. 16, Univ. Sur., flowed 90 bbl. after shot, T.D. 1,886 ft.

TEXAS PANHANDLE COMPLETIONS

Carson County: Continental 4-E Burnett, Sec. 117, Blk. 4, dry, T.D. 3,245 ft.
Skelly 155 Schafer ranch, Sec. 196, Blk. 3, potential 331 bbl. after shot, pay 3,132 ft., T.D. 3,212 ft.
Skelly 156 Schafer ranch, Sec. 190, Blk. 3, potential 490 bbl., shot 3,114-3,200 ft., T.D. 3,200 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

Grayburg-Jackson, Eddy County: Grayburg Oil Co. 7-B Burch, 23-17s-29e, flowed 296 bbl., pay 2,780 ft., T.D. 2,881 ft.
Aston & Fair 1-B Stevens, 26-17s-30e, flowed 40 bbl. in 1 hr., pay 3,275-95 ft.
Maljamar, Lea County: Maljamar Oil & Gas Corp. 13-B William Miller, 19-17s-32e, flowed 165 bbl., pay 3,930-70 ft., natural.
Johnnie Cockburn 5-B Miller, 25-17s-32e, flowed 102 bbl. in 4 hr., pay 4,100 ft., T.D. 4,200 ft.
Square Lake, Eddy County: Barney Cockburn 11 George Etz, 5-17s-30e, flowed 17 bbl., top pay 2,688 ft., T.D. 2,928 ft. in lime, P.B. 2,775 ft., shot 2,685-2,775 ft., new pay for the pool.
Barney Cockburn 11 Etz, 35-16s-30e, flowed 70 bbl. in 8 hr., main pay 3,015 ft., T.D. 3,184 ft.
Sanders Bros. 5-E Leonard, 4-17s-30e, flowed 237 bbl., shot 2,855-2,932 ft., T.D. 2,936 ft., top pay 2,868 ft.
Sanders Bros. 6-E Leonard, flowed 58 bbl., pay 2,872 ft., T.D. 2,952 ft., shot.
Continental Oil 2-36 State, 36-16s-30e, flowed 25 bbl. in 13 hr., natural, top pay 2,947 ft., T.D. 3,020 ft.

EQUIPMENT PROGRESS...

PURCHASING AGENTS GROUP VISITS JOHN ZINK PLANT

For its first fall meeting, the Mid-Continent Purchasing Agents Association was entertained at the John Zink Burner Co. plant in Tulsa, September 22.

Approximately 175 persons attended, including not only purchasing agents, but many oil company engineers or operating personnel. Before serving the elaborate buffet supper, the group was taken on a tour of the plant. Much interest was displayed in the foundry, where a special shift of workmen was on duty to show visitors the pouring operation.

Lincoln Announces New Electrode For "Fleet-Fillet" Welding

A new arc-welding electrode, designed to add still more speed to arc welding in war production, is announced by Lincoln Electric Co. of Cleveland, Ohio.

The new electrode, designated as "Fleetweld 11" is created expressly for use with the "Fleet-Fillet" technique of arc welding, recently announced by the company. The electrode is designed to obtain maximum benefit in speed of welding from the new technique.

In demonstration, the new electrode welded in 35 seconds a joint that required 1 minute and 17 seconds to weld with conventional electrodes and ordinary procedure.

The new electrode and the "Fleet-Fillet" technique permits up to 100 per cent faster fillet welding, and will cut the production time on welded ships, tanks, guns and other strategic war materials.

Designed to complete a weld in one pass, "Fleetweld 11" is made in 18-in. lengths and two diameters, 5/32-in. and ¼-in., packed in 50-lb. cans.

TRADE LITERATURE

CLARK BROS. CO., INC., Olean, N. Y.—Booklet entitled "Maintenance Hints for Clark 'Angle' Super Tow Cycle Gas Engine Driven Compressors." Briefly, it considers (1) the proper maintenance of the Clark unit and when it should be done, and (2) the troubles which operators sometimes encounter and the methods to solve them. Also there is a section comprised of 23 Do's and Don'ts which every plant engineer and maintenance man should know.

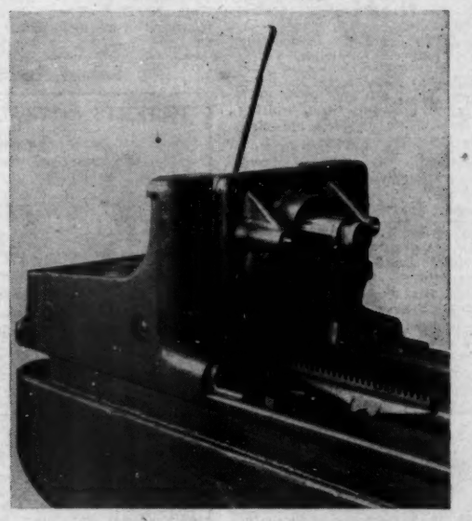
B. F. GOODRICH CO., Akron, Ohio.—An attractive booklet describing the high lights of its 25-minute motion picture, "Keep 'Em Rolling," showing the importance of rubber in the nation's war effort. The booklet contains three self-addressed request cards for the showing of the film, which may be obtained for showing before any organized group.

Work Holder Designed for Use on Threading Machine

Landis Machine Co., Waynesboro, Pa., manufacturer of thread-cutting machines, die heads, collapsible taps, etc., has developed a special work-holding fixture for use with its Landmaco machine for threading vital components required in munitions industries.

The fixture supports the work piece accurately and rigidly during the threading operation. It has a work-aligning arbor on which the work is retained by a collar which fits a square, milled close to the end of the arbor. A lever-operated cam arrangement at the rear end of the arbor provides a means for drawing and locking the work piece on two driving and locating pins.

The fixture is fastened to a face plate which bolts to the machine carriage in place of the conventional carriage front or vice. It has both horizontal and vertical adjustment of the carriage to assure accurate and permanent alignment of the work piece with the center of rotation of the threading unit. It was



designed to hold within extremely close tolerances for thread concentricity and to assure maximum production by eliminating time otherwise required if the work piece were gripped in a conventonal vise.

AMONG EQUIPMENT MEN

Norton Advances Montague To Post of Vice President

Wallace T. Montague, assistant vice president in charge of sales planning, has been elected vice president, Norton Co., Worcester, Mass. Mr. Montague has been associated with Norton Co. since 1912, devoting most of his efforts to research and sales. He is an alumnus and trustee of Worcester Polytechnic Institute, chairman of the directors of the Grinding Wheel Manufacturers Association, vice president of the Special Refractories Association, and president of the Worcester Chamber of Commerce.

Kirkpatrick Made President In Landis Machine Promotion

C. N. Kirkpatrick, vice president and general manager, has been appointed president of Landis Machine Co., Waynesboro, Pa. He will continue his duties as general manager. G. M. Stickell, sales manager, succeeds him as vice president while continuing his duties as sales manager.

Subsidiary of Kropp Forge Enlarges Executive Staff

Kropp Forge Co., Chicago, announces the addition of several executives to the personnel for its new subsidiary, Kropp Forge Aviation Co. These include: J. E. White, former vice president of R. C. Larkin Co., Chicago, who will be project manager in charge of the construction of the new plant; Budd H. Gebhardt, recently production engineer handling government naval contracts for Goss Printing Press Co., Chicago, who will be in the production department; and I. G. Moore, who for the past 15 years has been associated in a promotional and editorial capacity with various trade publications and associated magazines, who will be personnel promotion director.

In addition, J. H. Lund, who for the past several years has been in the Kropp Forge Co.'s sales organization, has been made vice president of the new company. He is a graduate of the University of Illinois, and prior to joining Kropp Forge Co., was with Illinois Bell Telephone Co. and the Rockford Drop Forging Co.

Mr. White, the new project manager, was with the Illinois State Highway Department for many years, later with the Shell Petroleum Corp. (now Shell Oil Co., Inc.) in a construction capacity, and then for 11 years in purchasing, production and sales of construction machinery for Continental Roll & Steel Foundry Co. When the latter company's construction machinery division was sold to the Gar Wood Industries, he transferred its activities to Detroit, from where he moved to Chicago with the Larkin Co.

Mr. Gebhardt was graduated from Northwestern University, where he majored in factory management, in 1934. Prior to his connection with Goss Printing Press Co., he was management advisor for the Chicago office of the Woolworth Co.

Mr. Moore is a graduate of the University of Chicago.

Cardwell Official Returns From South American Visit

That "South America will be one of our biggest export markets after the war" is the opinion of R. B. (Bob) Gilmour, vice president, Cardwell Manufacturing Co., Inc., Wichita, Kan., who has just returned from an extensive business trip to that continent.

R. B. (BOB) GILMOUR

Mr. Gilmour was in South America more than a year and in that time visited all the oil fields of Argentina, Bolivia, Peru, Ecuador, Columbia, Venezuela and Trinidad. "For the present, things are quiet," Mr. Gilmour said, "but the postwar situation looks very promising."

CLASSIFIED ADVERTISING

THE MARKET PLACE OF THE OIL INDUSTRY

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

LEASES ROYALTIES
PRODUCING OR NONPRODUCING
Texas, New Mexico, Oklahoma, Louisiana and Illinois
20 Years' Experience
Inquiries Invited
B. D. BUCKLEY
60 Broadview Drive, Clayton St. Louis, Mo.

FOR SALE: Oil and Gas leases on proven structures, drilling propositions, small production and fluorspar deposits. Reports furnished. W. P. Harley, Bowling Green, Ky.

FLORIDA Oil Leases for sale—Jackson, Holmes, Washington counties. Spreads of 1000 acres; 25 cents per acre; 10-year leases; 10-cent rental. Paid up to 1943. Why wouldn't the Gulf Coast oil trends extend across Florida? Write for further information, 609 Gulf States Bldg., Dallas, Texas.

FEW small tract considered on structure near 9,000 ft. East Texas Wildcat starting. Closing out 25 for one bets short time. E. Croft, Proctor, Texas.

FOR SALE

40 Acre Lease in Dupo, Ill. One well made over 75 barrels per day in Trenton. Will sell cheap. Box B-272, The Oil and Gas Journal, Tulsa, Okla.

NOTICE OF SALE OF
OIL WELLS AND LEASES

The Ordovician Oil Company, of San Angelo, Texas, offers the following properties for sale to the highest cash bidder:

7 Producing Oil Wells and a half interest in two other producing wells located in what is known as the Sharon Ridge field, in Scurry County, Texas, and the oil and gas leases on which they are located, aggregating around 280 acres.
1 Well contracted to be drilled on 40 acres proven acreage, and another well to be tested following a shot, which shows evidence of production.
1—61 Wichita Spudder, good condition, together with power, lights, equipment and tools.
3 New 250 Barrel welded storage tanks.

The above wells are now producing under proration and shut-down days around 2000 barrels per month, which sells for around 92 cents to 94 cents per barrel.

Detailed particulars relating to all these items will be furnished on request, including valuation reports of responsible and reliable petroleum engineers.

If interested write the Ordovician Oil Company. Bids will be received at its office, Box 49, San Angelo, Texas, up to the 15th day of October, 1942.

80,000 ACRES in Tennessee, timber, coal, oil and gas possibilities $2.00 per acre in fee. Write G. Lucas, 124 Milam Street, Shreveport, Louisiana.

WANTED TO BUY: Crude oil producing properties. Give number of wells, location, field, daily production, acreage, and price in first letter. Box B-290, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE: Oil and gas leases North and South Dakota, reasonably priced. Owner, P. O. Box 1163, Tulsa, Oklahoma.

FOR LEASE: 160 Acres in Oil King Dist., Fresno Co. Near big development, registered dealers only. Wm. L. Crews, 200 Shaver St., San Rafael, Calif.

Leases and Drilling Blocks

BARTLESVILLE Sand lease, 280 acres, 20 to 50' pay. Excellent water drive proposition, 3 successful ones vicinity; 4 wells on lease. Cash, over-ride, or working interest considered. Box B-281, The Oil and Gas Journal, Tulsa, Okla.

TO LEASE: The best Petroleum lands of CUBA according to Government Geologists. 1000 acres. Come and see them. Gustavo Roig, Capdevila 57, Habana, Cuba.

Financing

CAPITAL SEEKERS — Interested in raising $25,000 or more for a legitimate project should communicate with AMSTER LEONARD, Fox Theater Bldg., Detroit, Mich.

Ranches and Farm Lands

14,000 ACRES ranch, Oklahoma. Is handling 700 cattle. In estate, must sell or will lease for oil or sell lease and royalty. Adjoins block of Major Oil Co. Write for description, Guy Speakman, Liberal, Kans.

FOR SALE BY OWNER
8-section grass pasture and 280 acres of irrigated farm land 10 miles south of Roswell and ¼ mi. of main highway. W. H. Woodman, 806 N. Penn, Roswell, N. M.

50,000 ACRES AT $5.50. Well improved cow ranch. Weeds of gramma grass, also brushes, lots of water, good fences (five wires), six pastures, on railroad and highway, near good towns, immediate possession. Low taxes. W. H. Wilson, Carrizo Springs, Texas.

Situations Wanted

12 years practical experience, gauging, pipelining, and refining. Complete lease and royalty knowledge. Proven executive ability, competent in office, will work in office or field. Desire permanent connection, prefer Oklahoma. Draft status 3-A. Available about October 20th. Write Box B-283, The Oil and Gas Journal, Tulsa, Okla.

INDEPENDENT operator with own tools wants drilling and pipe pulling proposition in Colorado, New Mexico, Utah. Address Box 598, Alamosa, Colo.

OIL Accountant, diversified experience, know purchasing, material. 20 years' experience. Exempt. Box B-294, The Oil and Gas Journal, Tulsa, Okla.

EXECUTIVE with thirty years experience in the oil business part of this time with major company and as vice-president of major independent company also as independent oil producer desires connection with independent company or with parties with money to invest in the oil business as there are many opportunities in the southwest to make money. Box B-262, The Oil and Gas Journal, Tulsa, Okla.

Help Wanted

NOTICE TO ADVERTISERS

Advertisers offering positions to workers skilled in critical war industries are requested by the War Manpower Commission to include the following sentence in their advertisement:

"Applications from those now employed in war industries will not be considered."

ENGINEERS WANTED

Chemical or Mechanical with minimum one year oil refinery plant operation or maintenance experience. Require University Engineering School graduate with basic knowledge principles fluid flow. To work on process flow sheets, equipment selection and general handling oil refinery. Defense Contracts as assistant to senior engineers. No aliens or men engaged Defense work considered. Opportunity up to individual. In reply state experience, education, draft status, salary expected. Foster Wheeler Corporation, Room 2402, 165 Broadway, New York.

WANTED
REFINERY DESIGN ENGINEER

Permanent position for man with thorough knowledge of pressure vessel and piping design. Experience as chief draftsman and construction engineer is desirable. Location middle west. Medium size independent company. In reply please specify personal data, experience, draft status, and salary required. Reply Box B-292, The Oil and Gas Journal, Tulsa, Okla.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta Co., 115 S. Cinn., Tulsa, Oklahoma.

Patent Attorneys

PATENTS — TRADE MARKS

All cases submitted given personal attention.

Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorney's Fees—FREE.

LANCASTER, ALLWINE & ROMMEL
Patent Law Offices
418 Bowen Bldg., Washington, D. C.

Incorporation

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

Equipment Wanted

WANTED—Steel tanks total 120,000 gallon capacity. Will take 5000 gallon or larger. Tidewater Equipment & Machinery Corp., 305 Madison Ave., New York. N. Y.

WANTED TO BUY

Pipe of all sizes, 2" to 16", inclusive, also refineries, pipe lines and abandoned wells. Wire, write or phone

Louisiana Iron & Supply Co.
Shreveport, La.

FIFTY 5" OD x 25' long Hot Drawn Seamless Tubing with an average wall thickness of either ¼", ⅜" or ½". Pan American Petroleum Corp., Destrehan, La.

WANTED: 64,000 ft. of 6 inch seamless high pressure line pipe or can use drill pipe. State location and price. Will buy in small lots. Melton Machinery & Supply Co., Seminole, Okla.

WELDING MACHINES WANTED

Will rent any quantity to increase production of Liberty Ships. Gas engine driven, 300 or 400 amp., skid mounted. Will pay ceiling prices, transportation and maintain. Advise location, condition, make, etc. Wire or write

R. D. ROCKWELL, Supt. of Purchases,
Houston Shipbuilding Corp.
Houston, Texas.

ATTENTION INVENTORS

Old established Pacific Coast Manufacturing Company is interested in acquiring patented or patentable items for manufacture on either outright purchase or royalty basis. Box B-251, The Oil and Gas Journal, Tulsa, Okla.

WANTED: Used wax molding press. Please state condition, location, and price. Box B-293, The Oil and Gas Journal, Tulsa, Okla.

USED, good condition, 16 inch by 12 foot bed lathe with taper attachment and steady rest, equipped with motor drive. Also grinder attachment for above lathe for grinding pistons, etc. Box 1011, Mt. Pleasant, Texas.

WANTED

Abandoned *Pipe Lines*, in or out of the ground, *Oil Wells*, *Steel Buildings* and Steel Storage *Tanks* of all sizes.

JOS. GREENSPON'S SON PIPE CORP.
National Stock Yards, St. Clair Co., Illinois.

CLASSIFIED ADVERTISING RATES

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgment is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30
4 Lines	1.40	2.40	3.40	4.40
5 Lines	1.75	3.00	4.25	5.50
6 Lines	2.10	3.60	5.10	6.60
7 Lines	$2.45	$4.20	$5.95	$7.70
8 Lines	2.80	4.80	6.80	8.80
9 Lines	3.15	5.40	7.65	9.90
10 Lines	3.50	6.00	8.50	11.00

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1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

IT'S A FACT—

that year after year these columns carry more Classified Advertising than the combined totals of all other media devoted to the oil industry. RESULTS account for this remarkable record. Write for rates

Classified Department

The Oil and Gas Journal
Tulsa, Oklahoma.

NEW COMPLETE INVENTORY

- Towers
- Vessels
- Storage Tanks
- Pumps
- Compressors
- Instruments & Meters
- Condensers & Exchangers
- Pipe
- Tubes & Headers
- Valves & Fittings

• Listings of Plains Oil & Refining Corp. included

Wire—Phone—Write for your copy

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba
Riverside at Second, Kansas City, Kansas

Robert W. Duden
Twenty-First at Union, Tulsa, Oklahoma

STORAGE TANKS

1—55,000 bbl. All Steel Riveted—6 Ring

1—55,000 bbl. All Steel Riveted—5 Ring

OFFERED FOR IMMEDIATE SALE. LOCATED EAST TEXAS. WIRE—PHONE—WRITE

SONKEN-GALAMBA SUPPLY CO.
Union Ave. at 21st St., Tulsa, Okla.
L.D. 410

FOR SALE: 30—1½ KW Steam Turbine Generators. $25.00 each. Patridge, Cities Service Oil, Bartlesville, Okla.

FOR SALE
COMPRESSORS

Complete Repressuring or Air Lift Plant for Immediate Delivery.

2—13 & 5½ x 12 Ingersoll-Rand XOB compressors 400# pressure V-belt driven by 120 H.P. Chicago Pneumatic 3-cylinder vertical gas engines.

2—12 & 7 x 10 Chicago Pneumatic 400# pressure vertical compressors direct connected to 120 H.P. 3-cylinder Chicago Pneumatic vertical gas engines complete.

Used very little — excellent condition. Located on original foundation in Louisiana.

EARL E. KNOX COMPANY
Erie, Penna.

FOR SALE: 60—4" 8V Thd. Fairbanks Sphero SE Valves, unrepaired. $10.00 each. Patridge, Cities Service Oil, Bartlesville.

FOR SALE: Star Mfg. Company, portable cooling tower, telescoping type, 7' wide, 13' long, 8' high. All steel. Melton Machinery & Supply Co., Seminole, Okla.

⅞" Oklahoma City used sucker rods, 50,000 feet, good condition. 50—10 and 12" x 23' Channels. 3—24" x 20' Beams and some short pieces, smaller sizes. Some reinforcing sucker rods, all at Oklahoma City. M. R. Travis, 1702 S. Boulder, Tulsa, Okla.

FOR SALE: Approximately 250—2", 3", 4" and 6" LH EH SL UP Klein Pipe Tongs, used. $1.00 per inch per tong. Patridge, Cities Service Oil, Bartlesville.

STORAGE TANKS, Vessels, Towers, Pumps, Engines and other gasoline plant equipment. GILBERT PIPE & SUPPLY Electra, Tex.

FOR SALE: 50—5½" OD Standard IBBM NRS SE CI Gate Valves, unrepaired. $10.00 each. Patridge, Cities Service Oil, Bartlesville, Okla.

FOR SALE: 7¼ x 14 Oil Well Power Slush Pump. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: 3—16" Baash-Ross Blow-out Preventers. Patridge, Cities Service Oil. Bartlesville.

BARGAIN—12 KW 125-Volt G. E. Generator complete with switch board. GILBERT PIPE & SUPPLY, Electra, Tex.

NEW OIL WELL DRILLING EQUIPMENT FOR SALE

Equipment purchased for shipment abroad sometime ago, now being offered either in part or in its entirety. Consists of large number Hughes Simplex Rock Bits, Reamers, Fish Tail Bits, Drilling Jars, Worthington Pumping Sets, Boring tubes, Drill Pipe Collars and miscellaneous replacement parts. Material located in New Jersey. Itemized lists furnished on request. Attractive prices.

MARINE METAL & SUPPLY CO.
167 South Street New York City

FOR SALE AT HOBOKEN, N. J. New boxed for shipment, export or domestic. No ratings required.

1—Emsco E-30 5-Sheave Crown Block
1—Emsco EA-36 5-Sheave Crown Block
1—Emsco A-54 4-Sheave Traveling Block
1—Emsco A-66 4-Sheave Traveling Block
1—Emsco BC-6 Oil Cooled Swivel
2—4¼" x 51' Upset Alloy Square Kelly
1—6" x 51' Alloy Square Kelly
2—4½" x 20' Drill Collars 5¾" OD
2—6⅝" x 20' Drill Collars 8" OD
1—5⅞" Reed Single Overshot Reamer
2—7⅞" Reed Single Overshot Reamers
2—12⅛" Reed Single Overshot Reamers
1—Witte Dieselectric Plant, Model VD-5, 2.5 KW, 110 Volt D.C. w/ Complete Set Spare Parts, Numerous 3½", 4½", and 6⅝" x 3140 Steel Subs
1—18⅝" OD Anchor Clamps
7—#480-F Vulco V-Belts

LUCEY PRODUCTS CORPORATION
Tulsa, Oklahoma, and New York, N. Y.

FOR SALE

We offer 523, 55-ton all-steel, self-clearing DOUBLE HOPPER CARS consisting of:

160 USRA construction; built 1921-1922; with A-B brakes; 1880 cubical feet capacity.

363 built 1910-1915; with KD-1012 brakes, 1683 feet capacity.

ALL HAVE FULL "U" CAST STEEL TRUCK FRAMES.

Purchaser must buy all.

PRICE: $1700.00 each f.o.t. Pennsylvania

TERMS: Cash with purchase.

DELIVERY CAN COMMENCE IMMEDIATELY AND BE COMPLETED IN ABOUT 60 DAYS—AND VERY POSSIBLY SOONER.

Some $30,000 to $40,000 NEW REPAIR MATERIALS also available which you may wish to have inspected at the same time.

TIME and EXPEDITION ESSENTIAL and DESIRABLE.

Yours for Victory,

IRON & STEEL PRODUCTS, Inc.
37 years' experience
13412 S. Brainard Ave., Chicago, Illinois
"ANYTHING containing IRON or STEEL"

FOR SALE: At Oklahoma City, one Sectional Steel sand or rock storage bin with two dump valves, $350.00. Patridge, Cities Service Oil, Bartlesville, Okla.

FOR SALE: 27½" Ideal Rotary Table, 5 sheave 200 ton Crown Block, 4 sheave 72" traveling block, 8" Ideal enclosed rotary hook. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: 50—5½" OD 11½V Thd, 200—7" OD 10V Thd and 25—10" 8V Thd., used CI Flat Plugs, cheap. Patridge, Cities Service Oil, Bartlesville, Okla.

DIESEL—GAS—ENGINES

Large selection — All sizes and types. Generator units, marine engines, gasoline engines, auxiliaries—boilers, steam engines, and turbo-generator sets.

Complete information on request.

A. G. SCHOONMAKER COMPANY
48 Church Street, New York, N. Y.

FOR SALE: 12 K.W. Portable Light Plant Powered by 35 H.P. International Engine. Melton Supply Co., Seminole, Okla.

FOR SALE: At Oklahoma City, 50 Solid and Split Casing Spiders with Slips for 9" and 9⅝" OD Casing. Complete, $50.00 each. Patridge, Cities Service Oil Co., Bartlesville, Okla.

40,000 Ft. 2" Line Pipe, Screw & P.E. Also 3", 4", 5½" 7", etc. Large stock of fittings, valves & other used material. GILBERT PIPE & SUPPLY, Electra, Tex.

2—5"x12" DUPLEX, end packed line pumps 292 bbl. hr., 575 pounds pressure. 2—2½"x4 stage centrifugals complete with 150 h.p. motors and controls. Will sell pumps or motors separately. Corken Pump & Machinery Company, 206 East Grand, Oklahoma City, Oklahoma.

FOR SALE: 85—7" OD 10V Thd. SE 1500-lb. WP CS Hughes Drilling Through Control Gates, unrepaired. $100.00 each. Patridge, Cities Service Oil, Bartlesville.

LINE PUMPS

Two—2½" 4 stage Byron Jackson multiplex with 150 h.p. motors and controls CORKEN PUMP & MACHINERY CO
206 East Grand Oklahoma City

FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

PRICED FOR QUICK SALE
200—ALL STEEL "USED" DERRICKS
COMPLETE—PIPE or ANGLE
SIZE, 3" x 80'—16' x 59'—16' x 56'—Knocked Down. Ready for immediate shipment.
COLUMBUS PIPE & EQUIPMENT CO.
GArfield 2133 Columbus, Ohio

1 COOPER-Bessemer 3 cylinder engine. Type G M R size 12" x 14", 225 HP direct connected to Cooper-Bessemer Compressor, high side 12" x 14", low side 6½" x 14". Excellent condition. Box B-291, The Oil and Gas Journal, Tulsa, Okla.

EMCO-McGAUGHY Integrator for Foxboro and Emco Recording Orifice Meter Charts, good condition. Utility & Industrial Supply Co., Jackson, Mich.

FOR SALE—23,000' of ⅞" and 3,000' of ¾" Pump Rods. Four 87' MTW 157,000 Lb. Derricks. One TC20B Oil Well Pump Unit. All in first class condition. Dirks Brothers, Tuleta, Bee County, Texas.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine Generator Sets, 220 volts, D.C. 7x8 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.

Terms to suit.

CINCINNATI MACHINERY & SUPPLY CO
26 West 2nd St., Cincinnati, Ohio.

FOR SALE: Complete Wilson Portable Rotary Rig with telescoping mast, suitable for 2,000 ft. drilling. Melton Machinery & Supply Co., Seminole, Okla.

TWO vertical type Askania Magnetometers. Also one complete Heiland resistivity outfit. Write Box B-285, The Oil and Gas Journal, Tulsa, Okla.

BUY AND SELL

Used Engines, Compressors, Power Plants and Gasoline Plant Equipment.

We Rebuild and Guarantee

L. F. SMITH CO.
217 W. Archer, Tulsa, Okla.

FOR SALE: Special 4" pipe line equipment, new or nearly new. Pipe cutting, beveling machine, Holiday detector, tar kettles, Model F cleaning and priming machine, Rola Grip couplings. Tipton line up clamps, Petol tongs and others. No priority required. RAY R. LITTRELL, CONTRACTOR, Box 13, LaGrange, Ga.

Steel VALVES!

Cast and Forged Also Cast Iron Valves

Standard and High Pressure

Every Type Used in an Oil Refinery

All Expertly Reconditioned and GUARANTEED to Perform Like New.

No Delays
Immediate Delivery
YOU SAVE 25%
Over Cost of New Valves

Brown-Strauss Corporation
1446 Guinotte . . . Kansas City, Mo.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma

WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co., National Mutual Bldg., Tulsa, Okla.

OIL PRODUCERS urgently need these 2-U.S. and 1 Canad. Patents for the Extraction of Oil from exhausted formation of Petroleum and Oil bearing sands, for sale or in royalty by Leo Strandell, Lometa, Calif.

FOR SALE: Landowner's Royalty under 120 acres leased to Humble Oil & Ref. Co. in Lea Co., N. M. North of the Big Hobbs Pool. 27 pools in County, HARRY S. WRIGHT, FARMINGTON, N. M.

Oil Industry Printing

OIL FIELD LEGAL BLANKS

Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Oil Press, 215 East Third St., Tulsa, Okla.

Journalisms:

MANY readers have asked how we got the complete text of the new Preference Order P-98-B in our issue of September 17, a day or more ahead of its publication elsewhere. Briefly, it was brought about through our Washington office plus some fast work on the part of members of our mechanical staffs whose names do not appear in the by-lines and in the masthead, but who make their contribution every week or there would be no Journal.

The last forms were in the pressroom when the Washington office advised that the order for which the industry had been waiting for several days was on its way via Western Union. The late forms were brought back to the make-up department, the lead story for the week was pulled, other articles were condensed and space was provided for some 3,000 words of telegraph copy. The pressroom made up the time lost and every mail was caught on the usual schedule.

•

WHILE predicting declines in requirements for gasoline on one hand, the Bureau of Mines cannot see a recession in demand for domestic crude oil "to any great extent in the near future." This conclusion, recorded in a forecast of demand issued at Washington last week, is all the more significant because of previous decision to institute nation-wide rationing of gasoline.

This apparent incongruity between slackened demand for domestic products as opposed to continuing requirements for crude, difficult to understand by some, is explained by the bureau in this language:

"Due to the sharp drop in imports, domestic crude petroleum must fill the market formerly supplied by foreign oils. Until recently, this increase in demand was offset by the continued liquidation of refined stocks that reduced crude runs to stills to a low level. When this liquidation of stocks ceases, total demand must be met from new production. Consequently, even with further curtailment of civilian consumption, the bureau does not expect the demand for domestic crude to decline to any great extent in the near future."

On Page 14 of this issue is the first of several analyses showing other reasons why crude-oil demand is relatively higher than the contraction of civilian refinery products would otherwise indicate.

•

EVERYONE is familiar with the generalities of the 24-in. crude-oil pipe line being constructed by the War Emergency Pipelines, Inc., from Longview, Tex., to Norris City, Ill. It is the most important project since the development of pipe lines for shipping oil and Journal readers have been advised of its progress from week to week. A phase which is of extreme importance to pipe-line operating and construction men, is the modification of customery methods developed for the laying of the line.

In next week's issue an article on the construction practices developed on this mammoth job will be presented. Paul Reed, pipeline editor, is the author of the piece and will report on what he saw on several visits to the line.

•

THE Japanese are reported to have succeeded in producing a good motor fuel from rubber, of which they have an overabundance. It is claimed that this synthetic gasoline is 25 per cent better than ordinary gasoline. The Japanese hope to relieve their oil shortage by producing it on a large scale from rubber, provided, of course, they have the steel necessary to manufacture the equipment and also retain control of the rubber-growing East Indies and Malaya. The United Nations are reported to be willing to deliver enough scrap iron for the purpose but are unable to guarantee the freedom from interruption necessary for a project of this kind.

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CALENDAR

October

INTERSTATE OIL COMPACT COMMISSION, autumn meeting, Palmer House, Chicago, Ill., October 1-3.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, regional meeting, St. Louis, Mo., October 2.

AMERICAN GAS ASSOCIATION, annual meeting, La Salle Hotel, Chicago, Ill., October 5-6.

TEXAS MID-CONTINENT OIL AND GAS ASSOCIATION, twenty-third annual meeting, Dallas, Tex., October 8-10.

WESTERN PETROLEUM REFINERS ASSOCIATION, technical meeting, Wichita, Kans., October 9.

AMERICAN WELDING SOCIETY, annual meeting, Cleveland, Ohio, October 12-15.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, fall meeting, Rochester, N. Y., October 12-14.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Hotel Ambassador, Los Angeles, Calif., October 15-17.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, thirteenth annual convention, Wichita, Kans., October 19-21.

NATIONAL STRIPPER WELL ASSOCIATION, annual meeting, Wichita, Kans., October 19.

SOCIETY OF AUTOMOTIVE ENGINEERS, Midwest Fuels and Lubricants regional meeting, Tulsa, October 22-23.

NATIONAL LUBRICATING GREASE INSTITUTE, tenth annual meeting, New Orleans, La., October 25-29.

NATIONAL ASSOCIATION OF CREDIT MEN, Petroleum Division, St. Louis, Mo., October 26-28.

NATIONAL SAFETY CONGRESS AND EXPOSITION, thirty-first annual meeting, Sherman Hotel-Palmer House, Chicago, Ill., October 27-29.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Austin, Tex., October 29-31.

WESTERN PETROLEUM REFINERS ASSOCIATION, technical meeting, Shreveport, La., October 30.

November

CALIFORNIA NATURAL GASOLINE ASSOCIATION, Los Angeles, Calif., November 6.

AMERICAN PETROLEUM INSTITUTE, twenty-third annual meeting, Palmer House, Chicago, Ill., November 9-13.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, thirty-fifth annual meeting, Netherlands Plaza Hotel, Cincinnati, Ohio, November 16-18.

AMERICAN ASSOCIATION OF OILFIELD DRILLING CONTRACTORS, second annual meeting, Mayo Hotel, Tulsa, November 19-20.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, annual meeting, New York, November 30-December 4.

AMERICAN CHEMICAL SOCIETY, national chemical exposition and national industrial chemical conference, Sherman Hotel, Chicago, Ill., November 24-29.

December

NEW MEXICO OIL AND GAS ASSOCIATION, annual meeting, Artesia Hotel, Artesia, N. M., December 2.

PETROLEUM ACCOUNTANTS SOCIETY OF OKLAHOMA, Hotel Mayo, Tulsa, December 17.

1943

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, New York, February 15-18, 1943.

April

AMERICAN PETROLEUM INSTITUTE, Division of Production, Eastern district, William Penn Hotel, Pittsburgh, Pa., April 8-9, 1943.

May

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, annual meeting, Houston, Tex., May 5-6, 1943.